The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 123, No. 2 — CHICAGO, ILLINOIS — SEPTEMBER 11, 1943

COPYRIGHT, 1943, BY AMERICAN MEDICAL ASSOCIATION

THE UNFITNESS OF YOUNG MEN IN MOTOR FITNESS

THOMAS K. CURETON, PH.D.
URBANA, ILL.

The medical and public health reports [1] of the Metropolitan Life Insurance Company and the Medical Division of the Selective Service [2] do not indicate the extent of unfitness of young men in motor fitness but deal with the more general health aspects involving teeth, eyes, heart, ears, feet, lungs, hernia, musculoskeletal defects and venereal diseases. Louis I. Dublin points out that the health of young men of the nation is better than ever on the basis of morbidity and mortality statistics. In the Navy rejections have averaged 54.9 per cent and in the Army about 50 per cent. Colonel Rountree, in commenting on the situation, says that this constitutes a problem of national concern and importance. It should call for immediate investigation and a prompt remedy. However, there is another side to the picture which is overlooked in these medical reports but which is of primary importance to the immediate needs of the armed forces. This is the state of young men in the dynamic aspects of motor fitness. Before the facts uncovered in the University of Illinois survey are presented it is important to clarify the logic of the important elements in motor fitness.

There is evidence to show that a large proportion of young men entering college from high school are unable to handle their bodies with the degree of efficiency needed in wartime. This situation reflects the protected softness of their lives and the inefficiency of educational programs to produce an acceptable level of motor fitness, due undoubtedly to inadequate time allotment, facilities and leadership as well as the types of program offered in the schools. In wartime, physical education is charged with preparing young men for hard physical work in industry or military service. Motor fitness may be demonstrated by means of stunts or performances with the body, thus showing that it can be controlled and balanced in various positions, that it is supple and normal in all major joints and that it is strong in the trunk and limbs; also that it is agile in climbing, jumping, crawling or dodging with speed, that it can develop a highly powerful effort if necessary and that it possesses stamina in a variety of endurance feats involving long continued effort and recuperation.

From the School of Physical Education, University of Illinois.

1. Health Aspects of the Draft, Statistical Bulletin of the Metropolitan Life Insurance Company 21:1-4 (Oct.) 1940. Physical Fitness of Draftees, ibid. 21:1-2 (Nov.) 1940. Physical Fitness of American Youth, ibid. 22:1-3 (June) 1941.

2. Rountree, L. G.: The Health of Registrants and the President's Plan of Rehabilitation, Science 94:552 (Dec. 31) 1941. Rountree, L. G., and Bugg, A. N.: Health of Registrants and Rehabilitation of Rejectees, Ann. Am. Acad. Polit. & Social Sc. 220:81-88 (March) 1942.

PRACTICAL EMPHASIS IN MOTOR FITNESS

Physical ability involving balance, flexibility, agility, strength, power and endurance in a variety of performances sums up to motor fitness. A bad gap or blind area of development in any of these aspects will result in physical inefficiency in a large number of related performances. Motor fitness emphasizes the more generalized gross and fundamental physical abilities which are dominated by development of the kinesthetic sense, muscular energy and suppleness of the tissues and joints, including the aspects which are basically involved in athletic or work skills with the big muscles of the body rather than the finer low energy precision skills. It means capacity to run, jump, dodge, fall, climb, swim, ride, lift and carry loads and endure long hours of continuous work.[3]

Balance represents neuromuscular control paralleling the development of the kinesthetic sense in acts of sitting, skating, riding, tumbling, walking logs or fences, skiing, dancing and a host of everyday skills. Many people are handicapped because they fall and get hurt at the slightest provocation, slip on a rug, slip in the shower or in the pool or tub or when they dismount from a moving vehicle. The greatest number of serious accidents are due to falls involving poor awareness of unsteadiness or lack of compensating control. Many adults cannot ride a bicycle, skate, swim or ski. They are unsteady in shooting or fall easily from moving vehicles. Some do not readjust quickly to experiences in which the body is turned or revolved. Balance in this sense is educable. It can be learned by gradual education of the kinesthetic sense in a variety of balance stunts. The more natural and important these are the better, but good preliminary training is associated with any fundamental gymnastic program. Advanced tumbling and diving require superb development of this ability.

Flexibility emphasizes the ability to move easily in the full range of joint movements, to tuck up tightly, to bend easily at the waist, to twist the spine easily, to point the toes fully and to breathe deeply and fully without much extra effort. Good suppleness is a concomitant of gradual and thorough body conditioning. It usually indicates that the joints and muscles are free from abnormal "muscle bound" conditions due to injury or abnormal development. Many events require flexibility directly, such as hurdling obstacles, running under low wires, crawling through culverts and small diameter tunnels, vaulting through the arms, jumping over a stick held in the hands, skinning the cat and fancy diving. Body suppleness also indicates roughly a type

3. Cureton, T. K.: How Fit Are We? in Physical Fitness Workbook, Champaign, Ill., Stipes Publishing Company, 1942, pp. 3-24; An Inventory and Screen Test of Motor Fitness for High School and College Men (edited reprint), Physical Educator 2:64-74 (Jan.) 1943; Physical Fitness a National Need, J. Phys. Ed. 40:66-67 (March-April) 1943.

of physiologic youthfulness, an important characteristic of tissues and healthy blood vessels. Many people are awkward because they lack flexibility. The old person walks jerkily; so may an injured athlete whose torn tissues have healed with adhesions. People with poor flexibility usually tire easily, have little grace in bodily movements and learn physical skills slowly.

Agility emphasizes the capacity for fast reaction in controlled nimble movements "rabbit-like" in action, and to move quickly, dexterously and easily. It implies ability to dodge a ball or a missile quickly; to spring quickly to the feet; to climb up a cargo net quickly; to weave through a maze of obstacles quickly; to vault fences or barriers quickly or to zigzag quickly in running from shell hole to shell hole; to get down and up quickly; to put on a life preserver or parachute quickly; perhaps to climb out of a burning plane quickly or to pull oneself into a lifeboat, to climb a rope onto a ship or to lower oneself by rope from a burning building, and to vault onto a horse or vehicle quickly. Quick and efficient control of the body in an emergency may save the life of one individual or many. One should be able to change one's postion quickly to avoid capture, fire, flood, bombs, gas, shells or gunfire. Obstacles must be overcome, sometimes in a hurry. Speed and endurance in the fundamental locomotion efforts are first essentials.

Strength emphasizes the capacity of the hands, legs or trunk to exert great force. Strong hands and arms are important for grasping, lifting or pulling heavy or resistant objects, such as shells, equipment, a partner, a heavy rifle or a machine gun. Holding the whole weight of the body suspended from the hands is a severe test if any appreciable time is involved. Swinging on or climbing ropes requires great strength of the hands, arms, shoulders and the large depressor muscles of the chest and back. Strength of the feet and legs is also important to bear the body weight, armor, pack and any extra burden. Weak feet and legs are a great handicap in marching under load, in lifting an injured buddy for a carry to safety, for jumping, running, skating, skiing or pushing a car out of the mud. Most of all the trunk is the base from which the arm and thigh muscles arise. It serves as a base to support forceful movements of the arms and legs. The muscles of the upper part of the back and chest pull the arms downward in chinning or climbing. The muscles of the buttocks give force to all locomotion efforts, as in cycling, running or jumping. The long back muscles hold the trunk upright and make it steady in pulling and pushing. The abdominal and thigh flexor muscles reinforce all kicking movements of the legs and sit up and leg lifting movements. A very weak person may not be able to sit up at all or lift the legs from the floor while lying on the back; or, again, he may be one who cannot chin the bar once or lift the equivalent of his own weight from the floor. A strong man can pick up a 200 pound deer, log or an injured man and put any one of these in a wagon.

Power emphasizes the capacity to release great explosive force to sudden violent efforts. Speed and force must be combined for maximum effect in a jump, sprint run, pole vault, baseball game or a grenade throw for distance. Usually the whole body is projected or some object is impelled by power transferred from the body.

Endurance is capacity for continuous exertion, involving in the first minute or two severe depletion of the oxygen reserve and the development of oxygen debt with severe distress. This is usually overcome by forced ventilation and adequate circulation of the blood. When relief comes, it is sometimes called "second wind." Local fatigue may develop in particular muscles, such as those of the feet and calves in hopping, or in the arms in chinning, without much effect in other parts of the body or in the general circulation. Circulatory (cardiac) fatigue may be due to long continued exertion for several minutes or hours. Cramps may develop or the control and rhythm of the movement may be lost. Ability to recuperate to a degree and continue to run, swim, climb a mountain or march under load are most obvious tests of endurance.

CLINICAL TESTS OF ILLINOIS STUDENTS

In 1940 a sample of 1,000 entering men students at the University of Illinois were tested on aspects of motor fitness with the following results:

13 per cent could not swim at all (across tank).
64 per cent could not swim 50 yards.
3.1 per cent could not chin themselves once.
25.9 per cent could not chin themselves five times.
24.1 per cent could not jump an obstacle waist high.
41.7 per cent could not skin the cat.

Some 14.2 per cent were judged by instructors to have very poor (soft, flabby or undeveloped) physiques and 10 per cent had a very poor posture.

In 1941 it was decided to continue this testing in order to study the men as carefully as possible. A standardized chinning-dipping-vertical jump test [4] was given to 3,099 men in the service courses in physical education. In this sample of university men some 620 men could not chin themselves more than 4.5 times, push up on the parallel bars more than 4.5 times or jump vertically more than 18½ inches above their reach. These standards are so low, as experts in physical education understand them, that the results were considered serious enough to warrant special effort to remedy the situation.

A voluntary physical fitness clinic was formed for men who scored in the lower 20 per cent on the test. Some 176 men were studied carefully in the clinic. The selection was entirely on the basis of the chinning-dipping-vertical jumping test, although all men had been approved for exercise by the health service department. About 20 per cent of the men were fat and soft—of the endomorph or endomedial class according to Sheldon's classification.[5] About 35 per cent of the men were of the ectomorph or ectomedial class by the same system. Only 1.18 per cent were judged as having a well developed mesomorphic type of physique. A general sample of the student population showed a much greater proportion of the more desirable body types: 21.18 per cent mesomedials compared to 8.33 per cent in the clinic; 32.36 per cent ectomesomorphs compared to 5.95 per cent in the clinic. The general university male population sample averaged 321.61 on the composite score of the Larson test, compared to 213.08 for the clinic sample. This difference is equivalent to the difference between a 68 percentile rating on the test compared to a 7 percentile rating as an average for the clinic sample.

In the physical fitness clinic about 50 per cent of the men could not make a hard abdominal wall to resist a fist pushed into it by an examiner. On a physique rating scale giving A, B, C, D and E ratings some

4. Larson, L. A.: A Factor and Validity Analysis of Strength Variables and Tests with a Test Combination of Chinning, Dipping and Vertical Jump, Research Quarterly 12:82-96 (Dec.) 1940.
5. Sheldon, W. H.; Stevens, S. S., and Tucker, W. B.: The Varieties of Human Physique, New York, Harper & Bros., 1940.

84.5 per cent of these men were rated below a B by the examiners, who felt the muscles of the arms, chest, part of the back, buttocks, thighs and legs under contraction. Some 36.9 per cent of the men scored below a 9 on the Schneider test for organic efficiency, being classified as functionally unfit on this test.

The clinic sample was given an inventory of motor fitness [6] composed of thirty items in all, with five items in each of the areas of emphasis on balance, flexibility, agility, strength, power and endurance. The results are given in table 1.

In endurance 72.50 per cent could not swim 440 yards, nor could 67.8 per cent chin themselves eight times or dip on the parallel bars eight times to meet the passing standard for the clinic. Some 46 per cent failed the mile run in seven minutes, and 32.2 per cent could not hold their breath thirty seconds after running in place for sixty seconds.

In power 68.50 per cent could not run 100 yards in 13.8 seconds, nor could 61.5 per cent jump 20 inches above their reach. Some 56.9 per cent failed in their attempt to climb the 20 foot rope in twenty-five seconds, 43.2 per cent could not put the medicine ball 34 feet, and 37.35 per cent failed the standing broad jump at 6 feet 6 inches.

In agility 54 per cent could not vault a bar placed at chest height, or 4 feet 6 inches, nor could 39.1 per cent jump over a stick held in the hands, nor could 32.2 per cent execute a running dive and roll to clear 5 feet between two lines.

In strength, 78.20 per cent could not do the extension press up with the hands straight forward from the shoulders and pushing up from hands and toes, nor could 78.2 per cent hold the feet off the floor for sixty seconds while sitting in the V sit position with the hands on the hips. Some 21.82 per cent could not do twenty leg lifts and twenty sit ups in succession.

In flexibility 67.7 per cent did not possess as much vital capacity as the average standard for men of the same surface area, corrected for temperature. Some 11.5 per cent could not touch the floor with their finger tips while keeping the knees straight throughout a slow forward trunk bend.

In balance 95.40 per cent could not do a hand stand, nor could 52.30 per cent do a squat stand for ten seconds. Some 10 per cent could not do a 1 foot toe balance for ten seconds with the eyes open.

TABLE 1.—*Results of Tests*

Endurance	45.38 per cent efficient
Power	46.51 per cent efficient
Agility	65.28 per cent efficient
Strength	67.34 per cent efficient
Balance	67.64 per cent efficient
Flexibility	74.97 per cent efficient

These facts, showing the men to be very deficient in many aspects of motor fitness, paved the way for the adoption of a universal motor fitness test required of all men students in the University of Illinois in 1942. A motor fitness test was devised, using the best two items in each of the foregoing categories for balance, flexibility, strength and power and three items in agility and endurance.

6. Classification in Motor Fitness, in Physical Fitness Workbook, pp. 37-52. An Inventory and Screen Test of Motor Fitness for High School and College Men, Physical Educator of the Phi Epsilon Fraternity, January 1943.

ILLINOIS MOTOR FITNESS SCREEN TEST

It was impossible to test a very large sample with the thirty item inventory because of the large amount of time required with the staff available. Some simplification was needed, but something more inclusive than the chinning-dipping-vertical jump test. The three item test correlated 0.447 with the 30 item criterion by direct correlation of total scores on each. A multiple R of 0.548 was obtained by combining chinning, dipping and vertical jumping to predict the criterion of thirty items. Some screen test was needed which would correlate much higher than this. A combination of frog stand, trunk extension flexibility, dive and roll, extension press up, medicine ball put and chinning combined by multiple regression technic to predict the criterion with a multiple R of 0.672, using the item in each major category of emphasis so that balance, flexibility, agility, strength, power and endurance would be represented. With the two best items from each category and the addition of foot and toe balance, vital capacity residuals, bar vault, dynamometer strength, standing broad jump and mile run gave 0.860. A battery was finally arranged of fourteen items which correlated 0.872. The battery was called the Illinois Motor Fitness Screen Test. It has a reliability of 0.912 by correlating the scores made on successive weeks under the same conditions. The reliability of the individual items ranges from 0.87 to 0.95. When administered properly the items are relatively stable measures of ability, as the total gain in composite scores is only 0.63 point out of 14 as an average in the tests in successive weeks. However, the items are improvable in a semester of training with greater percentage of improvement usually recorded in the balance and endurance items and least in the power items. The total scores improve from 23 to 40 per cent, depending on the time and intensity of training. The correlation between attendance and improvement is 0.444. The test has been normed for University of Illinois men with the results shown in table 2 (4,392 cases tested in May and September 1942).

TABLE 2.—*Classification of Motor Fitness of University of Illinois Men*

Total Scores	Frequency	Percentile	Rating
0	7	0	
1	16	0.34	
2	29	0.83	
3	64	1.91	Poor
4	76	3.51	
5	121	5.75	
6	143	8.75	
7	197	12.72	
8	217	17.32	Below average (fair)
9	305	23.27	
10	406	31.33	
11	663	43.45	Average
12	798	60.10	
13	798	78.20	Good
14	6,565	100.00	Superior

Number of students, 4,392

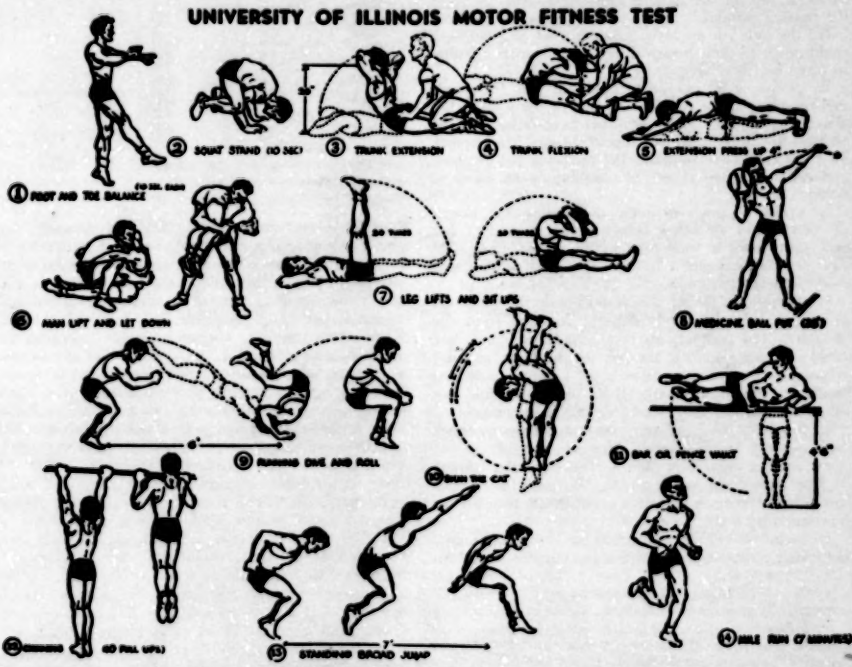
For screening purposes, when it is desirable to identify or "screen out" the lower 20 or 30 per cent the result may be controlled very well in a large sample. The distribution in table 2 shows that passing ten items would result in sectioning the lower third of the whole sample. In practice, the standards have been made slightly harder than the distribution given, because after the first introduction of the test men will train for the test. The "passing" standard at the University of

Illinois is eleven items, including one endurance item, plus a rating above 3 in physique, and swimming ability for 75 feet.

The test is fundamentally arranged to differentiate the ability of the men into three groups, according to their need for motor fitness conditioning:

1. Basic (poorest 30 per cent), failing to pass eleven of the fourteen items, or failing to pass one of the three endurance items, getting a physique rating of below 4 out of 10, inability to swim 75 feet over deep water.

2. Restricted (middle 30 per cent), failing to pass eleven items including two endurance items, getting a physique rating below 5, inability to swim 100 yards.



University of Illinois motor fitness tests.

3. Satisfactory (upper 40 per cent), passing eleven items including three endurance items, 7, 12 and 14 in table 3; rating above 5 on physique, and ability to swim 100 yards.

Students in group 1 are assigned to especially arranged conditioning classes (P. E. M. 60, basic physical fitness). They follow a graduated syllabus of work and maintain records of their physique, organic capacity and motor ability. These are kept in a physical fitness workbook which provides a guide for them to follow in the work.

Students in group 2 are allowed a restricted choice of course for physical education. They must select a course from a group which is known to have vigorous conditioning value. Those who do not swim 100 yards must take beginning swimming. Those with physique ratings below 5 because of poor musculature or posture are allowed to choose from apparatus stunts, weight lifting, individual tumbling, double tumbling, boxing and wrestling. Those who have physique ratings below 5 because of being too fat or because they failed the mile run are allowed a restricted choice from soccer, individual athletics, touch football and ice hockey, six-man football, military athletics—all vigorous running activities with considerable endurance work involved.

Students in group 3 are allowed to choose any course they like, including some of the more socialized courses of dancing, bowling, badminton and tennis.

The results on the screen test are quite satisfactory for differentiating ability and as a basis for assigning physical education classes. The test aims to identify the poorer ones in the lower 20 or 30 per cent so that they may be grouped for special instruction and better supervision than is usually provided. Individual conferences and guidance take more time and instructors with experience.

ANALYSIS OF MOTOR FITNESS OF 2,628 YOUNG MEN

In September 1942, 2,628 entering men into the University of Illinois were tested, fresh from the high schools of Illinois and nearby states. The gross classification resulted in 35.84 per cent being classified in the basic group, failing to pass the test; 23.71 per cent were

put into the restricted group as near failures; 40.45 per cent were rated satisfactory. The results are shown in table 3.

The results are rather startling because among the 35.84 per cent who failed to pass the test the proportion of failures on the fourteen items is so high that concern should be manifested for the physical and health future of the men. For instance, 79 per cent could not lift the legs from the floor twenty times while lying on the back and then do twenty sit ups in succession. This standard is not very high, because a fit man can do as many as 100 leg lifts and two hundred to five hundred sit ups. Some 78.8 per cent could not chin themselves ten times in succession and 76.1 per cent could not jog a mile in seven minutes, a very mediocre performance for any one who has the ability to run the distance. The organic capacity must be low in these cases, and the Schneider test scores for these failures in the mile average about 7 (functionally inefficient). Table 3 gives the results for all fourteen items in the three classes of satisfactory, restricted and basic. The results show that very large percentages of men fail relatively low if all men in both groups pass it. It is a good item only as the percentage of failures is definitely greater in the poorer group. This might be shown more exactly with biserial correlations between the total scores and the pass and fail responses on any item. It is obvious that a test with only a few items does not adequately test the ability in enough fundamental qualities and is apt to miss the point if applied to the low tail of the distribution curve. The screen test used in this work has been made to do just what it does very well—separate the the poor men from the better ones at the 20 to 40 percentile level of ability.

The results are quite stable as the ranks of the items according to relative difficulty rating correlated 0.92 in two samples taken in July and September 1942, with different men involved.

RESULTS IN SWIMMING ABILITY

In the September 1942 data there were 2,557 who responded to the swimming questionnaire. Responding that they could not swim "at all" were 679 men, or 26.55 per cent. Stating that they could swim 75 feet

TABLE 3.—*Results of Motor Screen Test—Analysis of Failures*

Item Number	Area of Emphasis	Name of Item and Standard	Number and Percentage of Failures on Each Item							
			Satisfactory		Restricted		Basic		Total	
			Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent
1	Balance	Foot and toe balance, 10 seconds each	42	4.9	34	5.5	161	17.1	237	9.02
2	Balance	Squat stand on hands, 10 seconds	126	12.9	126	20.6	511	54.5	777	29.54
3	Flexibility	Trunk extension, 20 inches	108	10.0	103	16.5	223	23.7	432	16.44
4	Flexibility	Trunk flexion, 8 inches	189	17.8	155	24.9	477	50.6	821	31.24
5	Strength	Extension press up, once 4 inches	268	25.3	215	34.5	671	71.2	1,154	43.15
6	Strength	Man lift and let down, once own weight	20	2.2	21	3.4	162	17.2	203	7.84
7	Endurance	Leg lifts and sit ups, 20 each in succession	288	28.0	324	52.0	744	79.0	1,356	51.96
8	Power	Medicine ball put, 35 feet	82	7.7	90	14.5	435	46.2	607	23.10
9	Agility	Running dive and roll, 6 feet (or agility run)	85	8.0	145	23.3	589	62.5	819	31.16
10	Strength	Skin the cat, hips one foot below shoulders and back	83	7.8	98	15.7	610	64.7	790	30.06
11	Agility	Bar or fence vault, 4 feet and 8 inches	39	3.8	25	4.0	306	32.5	350	13.32
12	Endurance	Chinning the bar (pull ups), 10 times	121	11.6	209	32.1	742	78.8	1,085	40.53
13	Power	Standing broad jump, 7 feet on mat	10	1.7	37	5.9	327	34.2	377	14.35
14	Endurance	Mile run, 7 minutes minimum	172	16.2	179	28.6	717	76.1	1,067	40.51
		Totals	1,083	40.45	923	35.71	942	35.8	2,628	100.0

(Physical Education Classes for Men, University of Illinois, September 1942, 2,628 Cases)

standards in fundamental events which physical educators claim to be significant in motor fitness.

The results also show that every item in the motor screen test has some discriminating value, in that there are the fewest failures in the satisfactory group, more in the restricted group and most of all in the basic group. It is not easy to arrange a satisfactory test with only a few items, because there are various aspects to motor fitness which are highly specific in themselves and deserve separate emphasis. The same items used to discriminate the basic group from the restricted group are not equally good for discriminating the satisfactory group from the restricted group. For instance, the differential in percentage failures between the basic and restricted groups is greater for skin the cat, mile run and chinning. Then follow the dive and roll, extension press up, squat stand, medicine ball put, bar vault, standing broad jump, leg lifts and sit ups, trunk flexion, man lift and let down, foot and toe balance and trunk extension. For separating the satisfactory group from the restricted group, the items rank as follows for differentiating value: leg lifts and sit ups, chinning, running dive and roll are best. Then in order are mile run, extension press up, skin the cat, squat stand, trunk flexion, medicine ball put, trunk extension, standing broad jump, bar vault, foot and toe balance and man lift and let down. Obviously an item is not any good but not as much as 100 yards were an additional 40.13 per cent, or a total of 66.68 per cent who could not meet the 100 yard swimming standard. Some 20.92 per cent stated that they could swim as much as 440 yards, and 12.40 per cent stated that they were life savers.

TABLE 4.—*Classification of Basic Group*

		Number	Per Cent
NS	Unable to swim 75 feet after jumping into deep water feet first (nonswimmers)	235	37.84
PS	Unable to swim 100 yards, any way at all (poor swimmers)	133	21.42
AS	Able to swim 100 yards but unable to demonstrate crawl, back crawl, breast and side stroke 75 feet each (average swimmers)	159	25.60
SS	Able to swim 440 yards and demonstrate four strokes as named (superior swimmers)	73	11.76
LS	Qualified in life saving with one or more of the national life saving organizations (life savers)	21	3.38
		621	100.00

It was decided to investigate this situation further by requiring the men in the basic group to take the swimming test in the pool. Exactly 621 men reported at the pool for the test and were classified as shown in table 4.

By actual test 59.26 per cent, or 368 men out of 621, could not pass the 100 yard test in the pool. By test 84.86 per cent could not swim 440 yards, and 80.6 per cent said that they could not on the questionnaire.

RESULTS IN PHYSIQUE RATINGS

With the understanding that men with physique ratings below 4 would be classified in the basic group and assigned to developmental work, 321 men failed to pass the standard because of having very poor posture, soft muscles under contraction or more than an inch of fat in double fold over the abdomen. The average rating for the entire sample was 5.45, for the satisfactory group it was 6.20, for the restricted group 5.57 and for the basic group 4.48. Not all men in the basic group had low ratings on physique. The correlation between the physique ratings and the motor fitness screen test scores for 680 cases was computed to be 0.318.

A careful study and classification of two samples of Illinois men show that according to Sheldon's body type criteria 66 out of 168 men were rated above average in physique and were in the lower 20 per cent in motor fitness by the screen test scores.

RESULTS IN ORGANIC FITNESS

Using the Schneider test as a measure of organic condition, 507 men in the basic group were tested. The reliability of the testing was 0.860. The mean score was 10.805 with the standard deviation 4.368. There were 128 men with scores below 9 classified as organically unfit (untrained).

IMPLICATIONS OF MOTOR UNFITNESS

Several important implications of the results may be pointed out:

1. The deficiency of large numbers of young men in fundamental motor ability traits of balance, flexibility, agility, strength, power and endurance is a fact. The proportions of motor unfitness are appalling.

2. Physical training programs are not compensating rapidly enough for urbanization with its associated mechanization, indoor work, dependence on motor vehicles and lack of the necessity of hard physical work in youth.

3. Large numbers of young men are entering adult life unconditioned and unmotivated to maintain physical fitness. This trend may contribute greatly to high accident rates, rapid loss of health after the age of 30 and widespread chronic disease because of the lack of preventive hygiene and conditioning work for the body.

4. Physical education and recreational programs have been inadequate, possibly because of inadequate time, facilities and leadership. In addition, the programs too infrequently focus on the physical fitness objective in terms of big muscle and organic endurance criteria. The socialization of the programs has possibly hurt the conditioning value of the activities. Many activities, such as bowling, dancing, socialized games, archery, bait and fly casting, badminton and tennis, possibly contribute very little as they are taught in typical physical education or recreation classes.

5. Basic motor fitness training would include deliberate emphasis on ability in a wide range of activities for balance, flexibility, agility, strength, power and endurance, apart from health knowledge, rules of the game, social play relations or form in refined physical skills.

6. The fact that 60 per cent of those failing to pass the motor fitness test cannot swim 100 yards, and 85 per cent of these cannot swim 440 yards, is a deplorable fact which indicates lack of organization in the schools to teach the important skills of swimming. Thousands of drownings in the war are directly attributable to this omission.

7. Physique is an important base for evaluating physical fitness and it correlates 0.318 with the motor fitness screen test scores, but this evidence suggests that motor fitness is quite unique apart from physical proportions and is due to training of the gross neuromuscular abilities for balance, flexibility, agility, strength, power and endurance. Likewise, organic efficiency is an important base, but the Schneider test correlates only 0.381 with the motor fitness screen test scores, although it correlates as high as 0.85 with endurance running criteria. This would seem to indicate that for a rounded emphasis physique, organic efficiency and motor efficiency need to be stressed, not one to the exclusion of the others.

8. These facts imply the great importance of physical fitness work from the dynamic approach as used in physical education. The findings suggest a fruitful area of work of primary importance from the health and safety point of view.

PHYSIOPATHOLOGIC ASPECT OF THE DISORDERS OF MUSCLES IN INFANTILE PARALYSIS

PRELIMINARY REPORT

JOSEPH MOLDAVER, M.D.
NEW YORK

Infantile paralysis is not merely an acute disease of the anterior horn area of the gray matter of the spinal cord. Lesions are also found in the posterior horns, in the sympathetic column and in the dorsal root ganglions. The white matter and the vessels of the pia are also involved. In addition, any part of the central nervous system, cerebral cortex, cerebellum, pons and medulla may be affected. However, the affinity of the virus for the gray matter of the cord is striking. After the period of acute inflammation, resolution takes place. It is usually complete in the white matter and sometimes even in the gray matter. In many cases anterior horn cells are destroyed or damaged by direct action of the virus. Distribution and intensity of the lesions vary widely.

These lesions explain the symptomatology of infantile paralysis very well. After a stage of general malaise, as seen in any infectious disease, there are signs of meningeal irritation, pain, followed more or less quickly by paresis or paralysis. The irritation of the meninges, dorsal root ganglions, posterior roots and posterior horns explain the pain which is one of the definite symptoms of the disease. The lesions of the anterior horn cells explain the motor deficiency, ranging from pronounced paralysis to slight weakness.

The paralysis is a flaccid one. The muscles become atrophic and toneless, the tendon reflexes being absent

This study was sponsored by the National Foundation for Infantile Paralysis.

From the Department of Neurology, Columbia University College of Physicians and Surgeons, and the Neurological Institute of New York.

The author is indebted to Dr. Tracy J. Putnam for his help and interest in this work. Dr. Paul F. A. Hoefer helped in preparing the manuscript and extended the use of the electromyographic equipment. Drs. Alan deF. Smith and William R. Snow referred some of the patients.

as well as some cutaneous reflexes. Tenderness on pressure of the muscles and pain caused by active and passive motion are also common findings. Hyperesthesia is found in most of the cases. In the weak or paralyzed muscles the existence of neuromuscular degeneration can easily be demonstrated and is the consequence of the lower motor neuron lesion.

Recently a new concept of infantile paralysis has been described by Kenny [1] and has been approved by some physicians. This new concept is fundamentally different from the one accepted for more than a century. The phenomena described in this concept are (1) muscle "spasm," (2) "mental alienation" and (3) "incoordination." Only recently the existence of some true paralysis has been accepted by the proponents of this concept. Muscle "spasm" is regarded as the most damaging symptom in poliomyelitis and is said to lead to degeneration if not treated. The muscles opposed to those in "spasm" become "alienated," divorced or erased from the patient's mind. The muscles which are in "spasm" are the damaged ones. "Spasm" is described as being generally present in the following groups: neck, back, hamstrings, calf and pectoralis muscles. The "alienated" muscles are nonfunctioning, not because they are paralyzed by the lesions of the anterior horn cells, but rather because for some unknown reason they are unable to receive impulses. The dissociation of the muscle from the brain is regarded as due to some physiologic block. "Alienated" muscles may become permanently nonfunctioning if not treated. In summary, according to this concept, infantile paralysis is a "spastic" not a flaccid paralysis; the muscles affected by this disease are those in "spasm." The antagonist muscles are "mentally alienated," and some muscles show incoordination. The danger of paralysis lies mainly in allowing "spasms" to continue.

In view of this concept, investigations were conducted in order to find whether or not these newly described symptoms actually exist and if they were actually overlooked for more than a century.

EXPERIMENTAL RESULTS

Forty-nine patients were tested. Neuromuscular degeneration was explored by chronaxia measurements and "spasm" was studied in some of these patients mostly by electromyograms. Muscles which might be considered to be "alienated" as well as muscles in "spasm" were primarily explored by chronaxia measurements. Muscles regarded as normal clinically were also studied.

The degree of neuromuscular degeneration can be evaluated by chronaxia measurements. This test allows us to detect slight neuromuscular degeneration. In all "alienated" muscles there was evidence of neuromuscular degeneration. In most of the "alienated" muscles, the nerves and muscles were in a state of partial neuromuscular degeneration. In a partial neuromuscular degeneration, some of the muscle and nerve fibers are damaged, while other fibers of the same muscle escape degeneration. This part of the muscle is therefore still able to respond to stimulation of its motor nerve. The extent of the lesion in each individual muscle depends obviously on the number of anterior horn cells damaged. Some of the muscles considered to be "alienated," according to the definition of Kenny,[1] were found in total neuromuscular degeneration. This means that all the fibers composing the muscle were in deep degeneration with pronounced increase in the chronaxia, and the muscle was no longer able to respond to stimulation of its nerve. Thus, in these patients different degrees of injury of lower motor neuron lesions were found.

Paralysis and neuromuscular degeneration are generally found in certain muscles or groups of muscles. These muscles are, in order of frequency, in the upper extremity the deltoid, biceps, brachialis anticus, brachioradialis, pronator teres, opponens pollicis, infra- and supraspinatus and clavicular part of pectoralis major; in the trunk the rectus and oblique abdominis muscles, mostly in their lower part; in the lower extremity the tibialis anticus, quadriceps, extensor digitorum brevis, extensor proprius hallucis, extensor digitorum longus and peronei. The hamstring and the calf muscles were also affected, but less frequently.

According to the definition of Kenny the word "spasm" is used to express a certain degree of reflex shortening of the muscle. It can sometimes be located by observation or gentle palpation of the muscle, but it is usually demonstrated when the muscle is passively stretched. Examination of the patients who were the subjects of this report showed that "spasm" can be easily confused with a pseudospasm.

In some cases pain was caused by passive stretching of the muscles without resulting contraction, while in other cases there was definite contraction in response to stretch without severe pain. Some patients may show contracture or shortening due to replacement of some muscle fibers by fibrous tissue. The latter can be confused with "spasm" if pain is elicited by pulling of the muscle. The only means of detecting "spasm" with accuracy is by the study of action potentials.

Where "spasm" was present, electrical activity was recorded by stretching of the muscles. This test sometimes appeared to be difficult, because the interference of voluntary movement has to be carefully avoided. When the muscle is stretched and pain elicited, the patient sometimes tends to resist. With most patients complete relaxation could be induced and interference of voluntary motion could be avoided.

Muscles in definite "spasm" showed generally normal chronaxia; that is to say, no trace of neuromuscular degeneration could be evidenced. On the other hand, in muscles with total neuromuscular degeneration there was no "spasm" at any time. Some patients were found to have partial neuromuscular degeneration also in the hamstring and calf muscles simultaneously with some "spasm." In such muscles the fibers which escape degeneration have normal chronaxia and are those in "spasm."

Action potentials of sixteen patients were recorded. Whether or not the legs were involved, "spasm" was recorded in the hamstring muscles of all these patients. This phenomenon in the hamstring muscles was also pronounced in a patient who had only meningeal signs. "Spasm" was recorded in the gastrocnemius muscles of some patients but very rarely in the extensor digitorum longus, tibialis anticus and quadriceps. In the abduction of the thigh and in the tensor fascia lata, "spasm" could not be recorded. In the upper extremity activity produced by stretching of the muscles was found less frequently. It was sometimes found in the biceps, in the extensor digitorum communis, very seldom in the flexor digitorum sublimis and in none

1. Kenny, Elizabeth: The Treatment of Infantile Paralysis in the Acute Stage, Milwaukee and New York, Bruce Publishing Company, 1941. Pohl, John F., in collaboration with Sister Elizabeth Kenny: The Kenny Concept of Infantile Paralysis and Its Treatment, Bruce Publishing Company, 1943.

of the cases in the pectoralis. As a rule "spasm" could not be detected at rest in any of these patients except one. Thus it was found that the more advanced the degeneration, the less extensive was the "spasm."

COMMENT

The principal and the most crippling symptoms of the disease are muscle paralysis and paresis. Some muscles are painful and tender. In some muscles the so-called "spasm" is evidenced. The paralysis is always flaccid and associated with neuromuscular degeneration; the latter can easily be detected by chronaxia measurements.

As stated previously, the permanently paralyzed and degenerated muscles are exactly the opposite of those considered to be in "spasm." The principal location of muscle "spasm" and the most frequent distribution of neuromuscular degeneration show obviously that "spasm" does not lead to neuromuscular degeneration. "Spasm" is consequently not the "most damaging symptom" of the disease.

We know that lower motor neuron lesions lead to flaccidity, atonia and abolition of the tendon reflexes, and this is the contrary to "spasm" or hypertonicity. It has been shown [2] that muscles in degeneration are frequently in fibrillation, but activities of single fibers cannot give a sustained contraction or tetanus of a muscle and thus cannot be responsible for "spasm."

In a partial degeneration, part of the muscles and nerve fibers escaping degeneration respond like normal structures. It is not surprising, therefore, that in patients with unilateral partial degeneration of the hamstring and calf muscles, "spasm" might be found on both sides, though always more pronounced in the normal leg.

It is worth while to notice that at the onset of the disease the principal location of the so-called "spasm" is, roughly speaking, almost the same as that found in any meningitis or meningeal irritation: in the neck, back, hamstring, and posterior calf muscles. In infantile paralysis some other muscles may be found in "spasm." In meningitis one generally does not find, for instance, tension in the pectoralis major or the latissimus dorsi. It should also be mentioned that in some severe lower motor neuron injuries of different etiology than poliomyelitis there may be definite shortening of the uninvolved antagonist muscles. For instance, in a lesion of the brachial plexus with paralysis of the deltoid, biceps, brachioradialis, coracobrachial, triceps, extensor of the fingers, it is not infrequent to find definite shortening which might be called "spasm" in the normal superior trapezius, pectoral and latissimus dorsi. The same distribution is frequently found in poliomyelitis. Thus in a peripheral lesion of the lower motor neuron, and without any lesion of the spinal cord, one might have a similar picture of "spasm." It is a well known fact that, if a protagonist muscle is paralyzed, the stretch reflex of the antagonist muscle is always increased. There are, therefore, obviously at least two mechanisms of "spasm," one being the meningeal irritation of the posterior roots and the second being an increase of the activity of the opposite muscles to those paralyzed by a lower motor neuron lesion.

2. Denny-Brown, D. E., and Pennybacker, J. B.: Fibrillation and Fasciculation in Voluntary Muscles, Brain **61**: 311-334 (Sept.) 1938. Tower, Sarah S.: The Reaction of Muscle Denervation, Physiol. Rev. **20**: 1-48 (Jan.) 1939. Persistence of Fibrillation in Denervated Muscle and Its Nonoccurrence in Muscle after Tenotomy, Arch. Neurol. & Psychiat. **49**: 219-223 (Aug.) 1939. Solandt, D. Y., and Magladery, J. W.: The Relation of Fibrillation to Atrophy in Denervated Muscle, Brain **63**: 255-263 (Sept.) 1940.

There is a third factor which may also account for part of the mechanism of "spasm"; inflammation of the posterior ganglions and posterior horns where part of the posterior roots end. Lesions of the sensory protoneuron explains that occurrence of severe and continuous pain. It also explains the hyperesthesia and some other sensory disturbances found in this disease. This also allows us to understand why pulling of some muscles may elicit pain without giving rise to any tension or "spasm." If the anterior horn cells are destroyed, they are not able to respond to the stimulation of the sensory end organs. "Spasm," as it is said, can most easily be demonstrated by stretching of the muscles. In doing so, centripetal impulses mostly from the muscle spindles and also from other sensory organs of the tendons are sent to the spinal cord and referred as pain.

Thus the mechanism of the so-called "spasm" is threefold: meningeal irritation of the posterior roots, involvement of the sensitive protoneuron and an exaggeration of the tonus in the muscles opposed to those paralyzed or weak. In the latter phenomenon it is known that there are not only mechanical factors but also absence of the normal inhibitory influence (Sherrington's reciprocal innervation) of the involved muscles on their antagonists. "Spasm" has not therefore a unique or single cause. Under the heading of "spasm" there may be even three different phenomena. One of the three factors is sufficient to elicit a reflex response and a shortening of the muscle. The meningeal component of "spasm" disappears relatively quickly. This meningeal reaction explains why it is more pronounced at the onset of the disease. Irritation of the posterior horns and ganglions may last longer than meningeal reaction. The last and the most persistent type of "spasm" is the one due to the increase of the normal tonus in strong muscles.

Besides these three factors, it should be mentioned that in a normal subject the stretch reflex of the hamstring and calf muscle was sometimes as manifest as in any case of poliomyelitis. In normal subjects definite action potentials were recorded. The pulling of these muscles did not elicit pain, but the tension was uncomfortable.

According to Kenny's concept, "alienated" muscles are muscles which have lost their ability to produce voluntary movement; these muscles are divorced from the mind because their antagonists are in "spasm." The findings reported here show definitely that no mental condition or any "physiologic block" is needed to explain "alienated" muscles. No one has been able to demonstrate that paralysis ever occurs in poliomyelitis without a certain degree of neuromuscular degeneration. This is the result of the damage of the anterior horn cells. Depending on the intensity and the extent of the lesions, the degeneration will be more or less well defined. This will be indicated by chronaxia measurement. It explains why some so-called "alienated" muscles may recover quickly. The reason for this is that we are dealing with a slight degree of partial degeneration.

Some muscles considered to be "alienated" were found in total neuromuscular degeneration, thus indicating that all the fibers composing the muscle were in deep degeneration. The chronaxia was much increased. These muscles are no longer able to respond to stimulation of its nerve. In infantile paralysis muscles with pronounced degeneration are doomed, because their loss of function is the result of destruction of

all anterior horn cells. A muscle is generally supplied by motor neurons from several segments of the spinal cord. Therefore total degeneration, implying a more widespread lesion, is not as frequent as partial degeneration. Other muscles also considered to be "alienated" had completely disappeared and were replaced by fibrous tissue. In these muscles the proliferation of fat and connective tissue had masked the atrophy.

It was not infrequent to find a deep neuromuscular degeneration in the pectoralis major, the clavicular part, while the sternal part was normal and in "spasm." In this instance the degeneration was as pronounced in the clavicular part of the pectoralis major as it was in the corresponding deltoid. The reason for this is obvious: we were dealing with a deep injury in the fifth and sixth segments of the spinal cord while the lower segments were spared.

The third and least important symptom described by Kenny is "incoordination."

Muscles partially involved are obviously weak, and the force employed is not well adapted to the aim of the movement. If, among the muscles which have to carry out motion, one or several are paralyzed or paretic, there will necessarily be considerable disturbance in the function of the extremity. The automatic regulation of the movement will be interfered with as well as the voluntary movement. This, of course, might be called "incoordination." We should, however, know that the mechanism of this symptom is to be found in the maldistribution of the impulses reaching muscles with different ability to respond, this ability to respond being the result of damage to some motor units.

SUMMARY

A new concept of infantile paralysis was recently described by Kenny and has been approved by some physicians.

According to this concept three principal symptoms are found: "spasm," "mental alienation" and "incoordination."

In view of this new concept, investigations were conducted. Forty-nine patients with infantile paralysis were tested with chronaxia measurements and in some cases action potentials were recorded. The following conclusions were drawn:

1. "Muscle spasm" is not "the most damaging symptom" and does not lead to neuromuscular degeneration. "Spasm" is not an entity but a complex phenomenon. It is the result of a combination of the normal stretch reflex, meningeal irritation of the posterior roots, increase of the normal tonus in healthy and strong muscles or muscular fibers opposed to weak or paralyzed muscles, lesions of dorsal root ganglions and posterior horns. Pain is a common symptom in acute poliomyelitis. This is a referred pain which is increased by stretching of the muscles.

2. In "alienated muscles" there is neither a functional paralysis nor a "physiologic block." That these muscles have partially or completely lost their power to contract is due to the fact that the anterior horn cells are damaged or destroyed. In the paralytic or paretic muscles considered to be "alienated," there is always some degree of neuromuscular degeneration.

3. "Incoordination" does not consist in a misdirection of nerve impulses. It is caused, if at all, by the inability of partially or totally denervated muscles to respond to otherwise normal nerve impulses.

710 West 168th Street.

COLD HEMAGGLUTININS IN ACUTE HEMOLYTIC REACTIONS

IN ASSOCIATION WITH SULFONAMIDE MEDICATION AND INFECTION

WILLIAM DAMESHEK, M.D.
BOSTON

Although mild anemia following the use of the sulfonamide compounds is common, the appearance of a severe and fulminating hemolytic anemia is unusual. Because this type of reaction, when it occurs, is unexpected and usually out of proportion to the amount of drug that has been administered, it has been thought to be an example of hypersensitivity or idiosyncrasy. However, definite proof of this or other type of pathogenic mechanism has not been discovered. In the cases reported here, in which acute hemolytic anemia developed during the course of an acute infectious disease and following administration of sulfathiazole and sulfadiazine, a potent hemagglutinin was found. This agglutinin, which was most active at ice box and room temperatures ("cold" hemagglutinin), reacted with the red cells of large numbers of prospective group O donors and with those of the patient (autoagglutinin). Although temperatures of 37 and 56 C. caused inactivation, the agglutinin was reactivated at room or ice box temperatures. The possibility is present that the agglutinins in these cases were a factor in intravascular hemagglutination and hemolysis with the appearance clinically of acute hemolytic anemia and hemoglobinuria. The relationship of abnormal hemagglutinins to severe hemolytic reactions is discussed, together with the importance of the recognition of cold hemagglutinins in performing compatibility tests for transfusion purposes. The presence of cold hemagglutinins in atypical pneumonia has recently become diagnostically significant. These abnormal antibodies may also be important in the development of acute hemolytic anemia in this and other diseases.

REPORT OF CASES

CASE 1.—F. B., aged 26, a sales engineer, became ill with mild fever, sore throat and cough. Although signs of pulmonary consolidation were not evident, the patient was given sulfathiazole in the dosage of 1 Gm. every four hours for two days, following which sulfadiazine in the same dosage was administered. In all, he took approximately 9 Gm. of sulfathiazole and 4 Gm. of sulfadiazine. Another physician (Dr. Edward Broderick) was called on the fourth day and the sulfadiazine was discontinued, symptomatic treatment for the cough being given. Since there was continued mild fever of 99 to 101 F., agglutination tests for typhoid, paratyphoid and undulant fever were done and reported negative. The sputum was negative for acid fast bacilli and pneumococci, and a throat culture revealed no pathogenic organisms. On August 28, one week after sulfadiazine had been discontinued, the patient complained of passing dark urine. On examination he was found to be somewhat pale and sallow; the red blood cell count was 3.7 million per cubic millimeter. On August 29 the patient was pale, dyspneic and uncomfortable; his urine was a dark wine color. He was then admitted to the Leonard Morse Hospital of Natick, Mass., with the presumptive diagnosis of "sulfathiazole poisoning." The lungs showed fairly numerous scattered crepitant rales but no definite evidence of consolidation. The urine was dark burgundy red with a heavy trace of "albumin," a rare red cell in the sediment but no casts. The

Aided by a grant from the Charlton Fund, Tufts College Medical School.
From the Joseph H. Pratt Diagnostic Hospital and the Blood Laboratory of the Boston Dispensary.

blood sulfathiazole level was zero. Blood examination revealed hemoglobin 60 per cent (Sahli), red blood cells 3.30 million, white blood cells 29,400, polymorphonuclears 84 per cent with an occasional myelocyte. Since a transfusion seemed desirable, the patient's blood was typed and found to be in group O (international). Numerous prospective group O donors were then cross matched with the patient's serum by the slide method at room temperature but were found to be "incompatible"—i. e. there was decided agglutination. Transfusion was accordingly postponed.

On August 30 the patient's condition was much worse. Pallor had noticeably increased and there was moderate jaundice. He was very dyspneic and was passing small amounts of red-brown urine which gave a strongly positive benzidine reaction. The red blood cell count was now 2.26 million and the white blood cell count 42,200. A consulting internist made the diagnosis of "hemolytic streptococcus infection, chiefly in the throat and lungs, with question of blood stream invasion" and advised the readministration of sulfadiazine in a dosage of 1 Gm. every two hours for two doses, then every hour. On this regimen the patient's condition became rapidly worse. An x-ray film of the chest showed "rather extensive mottled dulness in the right lung fields extending from the hilus to the right base, suggesting a virus pneumonia."

On August 31 the patient's condition was critical. He was stuporous, extremely pale and moderately jaundiced. The red blood cell count was under 2.0 million and the leukocyte count was 43,000. The red cells showed distinctive spherocytosis and polychromatophilia, the many polychromatophilic macrocytes contrasting sharply with the small, dense appearing spherocytes. An occasional nucleated red cell was seen. Differential count of the white cells showed a severe polymorphonuclear leukocytosis with immature polymorphonuclears, including an occasional myelocyte. Four nucleated red cells were seen in counting 100 white cells. The platelets were abundant. The hypotonic fragility test was 0.56 to 0.24 per cent. The blood bilirubin was 3.6 mg. per hundred cubic centimeters.

The diagnosis of acute hemolytic anemia with hemoglobinuria secondary to administration of a sulfonamide compound was made and sulfadiazine was immediately discontinued. It was suspected that the "incompatibility" reactions against group O cells were due to the presence of a cold hemagglutinin. Examination of the patient's serum revealed a potent hemagglutinin which had the following characteristics: greatest activity at ice box (4 C.) and room (20 C.) temperatures, agglutination titer 1:128;[1] inactivation at blood temperature (37 C.) and at 56 C.; reactivation when the temperature was lowered to 20 C.; agglutinating activity against red cells of all group O individuals tested; autoagglutination; slight agglutination of guinea pig and rabbit red blood cells; hemolysis in low titer of rabbit red blood cells in the presence of guinea pig complement; no isohemolysin or autohemolysin demonstrable. By use of the Landsteiner test tube technic at 37 C.,[2] compatible group O donors were obtained and the patient was given a transfusion of 500 cc. of blood. The precaution was taken of keeping the blood continuously warm throughout its removal from the donor and administration to the patient. By means of a U tube connection, 350 cc. of a 5 per cent solution of sodium bicarbonate was continuously given during the transfusion. The patient's condition was almost immediately improved and on the following morning the urine had lost its brownish red color. He was given another transfusion of properly matched and warmed blood on this day (September 1), followed by an infusion of 500 cc. of 5 per cent solution of sodium carbonate.

On September 2 the patient's condition was greatly improved. There was still a slight elevation in temperature. Jaundice was no longer present. The urine was completely normal in color and free from albumin[3] and the benzidine reaction was negative. The red blood cell count was 2.79 million and the leukocyte count had dropped to 27,000. On September 3 the patient's temperature was normal. On the fourth day the red blood cell count rose to 3.34 million and the leukocyte count was 17,500. Although leukocytosis (17,000 to 20,000) persisted for another week, the course was now one of continuous improvement. On September 12, when the patient was discharged from the hospital, the red cell count was 3.92 million. On September 19 it was 4.5 million. Tests of the patient's serum on October 2 indicated almost complete disappearance of the cold hemagglutinin, which was now active only at ice box temperature in a titer of 1:2.

CASE 2.—L. M., a housewife aged 50, had an acute illness with fever on Dec. 15, 1942. Three days later she was seen by a physician, who prescribed sulfadiazine. This was apparently taken for three days, the total dosage being between 6 and 12 Gm. (the stories varied). The therapeutic response to the drug being unsatisfactory, diagnosis of a virus infection was made. She began to feel very weak several days later. On December 31, when seen by Dr. Small of Norwood, Mass., she presented evidences of bilateral patchy pulmonary consolidation suggesting a "virus" pneumonia. There was a lemon yellow tint to the skin, and since the dyspnea seemed out of proportion to the degree of pulmonary involvement the patient was admitted to the Norwood Hospital on Jan. 1, 1943. She was in a desperate condition, with extreme pallor and moderate icterus. The temperature was 103 F. The blood showed a hemoglobin content of 28 per cent, a red cell count of 700,000 per cubic millimeter and a leukocyte count of 23,000 with 80 per cent polymorphonuclears. Great difficulty was experienced in performing red cell counts or making blood smears because of the strong tendency of the red cells to clump within the pipets and on the hemacytometer; the blood smears showed masses of agglutinated red cells. These phenomena were later obviated by warming the Hayem solution, the pipets, the hemacytometers and slides immediately before use. The patient's blood group was O (international), but cross matching with the patient's serum against numerous prospective group O donors showed "incompatibility" in all. In addition there was autoagglutination. The possibility of a cold hemagglutinin was suspected by the pathologist, Dr. Schultz, and compatible donors were obtained by performing the cross matching test at incubator temperature. Four transfusions of 500 cc. of citrated blood were then given, great care being taken to keep the blood and all utensils warm during the procedure. After the second transfusion, on January 3, the red blood cell count rose to 2.67 million, but on January 4 it was 2.20 million and on January 5 it was 2.05 million. On January 6, when I saw the patient, there was only slight pallor and icterus. The lungs showed no consolidation. The liver was readily felt two to three finger-breadths below the right costal margin but the spleen was not felt. The hemoglobin content was 54 per cent and the red cell count 2.71 million. The blood serum at this time showed no abnormal agglutinins. Without further therapy the patient made an uneventful recovery.

CASE 3.—G. W., aged 24, an upholsterer, was admitted to the J. H. Pratt Diagnostic Hospital on Feb. 14, 1943. About fifteen days before admission, an acute illness developed with fever, malaise, severe headache and aching pains in the shoulders, arms, back and legs. During the first week of his illness, sulfadiazine in a total dosage of approximately 6 Gm. was administered. This was apparently without effect, since a temperature of 101 to 103 F. continued and a severely sore throat developed on the seventh day of illness. He then noticed enlarged glands in the neck and later in the groins. His urine became very dark. On February 10 he became quite weak. His physician, Dr. Leavitt of Stoneham, Mass., noted jaundice and a rash of the trunk. On admission to the hospital he looked weak, pale, thin and jaundiced. An eruption composed of fine macules which faded on pressure was present over the skin of the abdomen. A small shallow ulceration of the buccal surface of the lower lip and a large, somewhat deeper one of the right tonsillar fossa were present. The gingivae were normal and no petechiae were present. Examination of the heart and lungs was negative. The spleen was readily palpable three finger-breadths below the left costal margin, but the liver could not be felt. There was generalized lymphadenopathy, bean and hazelnut sized glands being readily felt in the cervical, axillary, inguinal and femoral nodes.

1. Serum dilution; total dilution 1:512.
2. Dameshek, William, and Schwartz, S. O.: The Presence of Hemolysins in Acute Hemolytic Anemia, New England J. Med. 219: 75 (Jan. 13) 1938.
3. The "albumin" in cases of hemoglobinuria is probably due to hemoglobin present.

The clinical diagnosis was infectious mononucleosis with jaundice. The urine was mahogany colored and contained 2 plus bilirubin (bile) and increased quantities of urobilinogen (4 plus) and urobilin (3 plus). By the Wallace-Diamond technic the urinary urobilinogen was positive in a dilution of 1:160. There was no hemoglobinuria, as determined by the benzidine test. The total blood serum bilirubin (Malloy-Evelyn technic) was 6 mg. per hundred cubic centimeters, with 3.4 mg. "direct" and 2.6 mg. of the "indirect" variety. The blood showed hemoglobin 63 per cent, 9.8 Gm. (Evelyn photoelectric); red blood cells 3.10 million, white blood cells 12,500, platelets 285,000, reticulocytes 5.6 per cent. The lymphocytes were of all shapes, sizes and staining characteristics, with a number of large, early cells characteristic of those seen in infectious mononucleosis. The red cells showed definite spherocytosis, which contrasted strikingly with the large polychromatophilic cells present. The hypotonic fragility showed beginning hemolysis at 0.72 per cent sodium chloride and complete hemolysis at 0.24 per cent.

The clinical diagnosis of infectious mononucleosis was thus substantiated by the typical findings in the blood smear, but the presence of anemia, spherocytosis, increased hypotonic fragility, slight reticulocytosis and greatly increased urinary urobilinogen indicated a hemolytic process. The possibility that this might be due to the recent sulfadiazine administration was suspected, and because of our experience with abnormal agglutinins in the previous cases the serum was investigated. A potent abnormal hemagglutinin was found with the following characteristics: agglutination of the red cells of all the blood groups, including those of group O; autoagglutination; most pronounced agglutination at ice box and room temperatures; inactivation at 56 C.; slight but no definite inactivation at 37 C.; no isohemolysins or autohemolysins; slight hemolysis of guinea pig and rabbit cells, with inactivation at 56 C. A very strong sheep cell agglutinin (in serum inactivated at 56 C.) was also found; this was positive in a total serum dilution of 1:1,024. This heterophile agglutinin was thus entirely distinct from the isoagglutinin which was active in temperatures below 56 C. Another unusual finding was present: Venous blood when removed, allowed to clot and to stand at ice box or room temperature developed a reddish tinge, then a striking degree of hemoglobinemia in the serum. After twenty-four hours of standing, the blood serum contained approximately 150 mg. of hemoglobin per hundred cubic centimeters. When serum was immediately removed from the clot and inactivated by heat and then returned to the clot, further hemolysis did not occur. Hemolysis did not occur in blood which was oxalated and allowed to stand at room or ice box temperature for the same length of time as the clotted blood. There was, however, a small zone of hemolysis just above the layer of sedimented red blood cells. When red cells which had been washed several times (three to seven) in isotonic solution of sodium chloride were allowed to stand at ice box temperature they caused hemoglobin discoloration of the saline solution. This gradually diminished as the patient improved, as did the phenomena of isoagglutination, autoagglutination and stasis hemolysis. By the time of the patient's discharge on February 20 they had completely disappeared. The heterophile agglutination test on this date was still strongly positive, however, to a total dilution of 1:512.

At first, typing of the red cells for the blood group was impossible since, even with washing the red cells three to seven times, an "AB" blood group was obtained. After four days, however, the autoagglutinin adsorbed to the red cells had so diminished that correct blood typing was possible, when it was found to be group O.

There was a spontaneous rise in the reticulocytes to 13 per cent on February 20, followed by a gradual rise in the red blood cell count. Simultaneously the patient made a slow but steady clinical improvement with gradual regression in fever, jaundice, lymphadenopathy and splenomegaly. The temperature reached normal on February 20. On March 5 there was only slight lymphadenopathy and the spleen was barely palpable. On this date the red cell count had risen to 5.2 million, the leukocyte count was 6,200 per cubic millimeter and the lymphocyte percentage had fallen to 52. The heterophile agglutination test was now positive in a dilution of 1:128; no abnormal isoagglutinations were present.

COMMENT

Acute hemolytic anemia which results during the administration of the sulfonamide compounds differs strikingly from the mild hemolytic anemia which develops so commonly, particularly after administration of sulfanilamide. It is rapid in its onset and progress, its effects are often violent and it may even be fatal. Since only an occasional patient develops the acute condition, it has been thought to be the result of an idiosyncrasy or allergy, although actually the mechanisms involved are quite obscure. Long, Bliss and Feinstone [4] readministered small doses of sulfanilamide to 4 persons who had previously had acute hemolytic anemia following administration of the drug. In 3 instances anemia developed after a few days—on the identical day which had previously witnessed the appearance of the anemia. The presence of autoagglutinins in the cases of Antopol and his associates [5] and of Rothstein and Cohn [6] and of cold isohemagglutinins and autohemagglutinins in the present cases suggests a possible relationship between these substances and the development of the anemia. In several previous papers Schwartz and I [7] have pointed out the importance of the presence of hemolysins in acute hemolytic anemia. Agglutinins and hemolysins are both antibodies which are often closely related. Some substances that are agglutinins under one set of conditions are hemolysins under another. Miller and I [8] have investigated this possibility further and have demonstrated that agglutinins injure the red cell membrane, making it susceptible to hemolysis by trauma and stasis. Ham and Castle [9] have stressed erythrostasis—due perhaps to agglutination of red cells—as the sole cause of hemolysis.

Since the time of Widal,[10] agglutinins have been found in many cases of acute acquired hemolytic anemia. It is possible that autoimmunization occasionally develops with the production of an antibody active against the patient's own red cells. A somewhat similar condition appears to hold true in erythroblastosis fetalis,[11] in which an anti Rh agglutinin develops in the mother by isoimmunization with the fetus's red cells, which except for the presence of the Rh agglutinogen are identical with those of the mother.

The possibility is present that a sufficient number of red cells of a patient taking a sulfonamide compound may be so altered as to serve as an antigen with the subsequent formation of an agglutinating antibody. Another, perhaps more likely, possibility is that certain infections may themselves result in the development of abnormal hemagglutinins. This we have previously commented on in our review "Acute Hemolytic Anemia" [7] and in a personally observed case of acute hemolytic anemia occurring with type XVII pneumo-

4. Long, P. H.; Bliss, Eleanor A., and Feinstone, W. H.: Mode of Action, Clinical Use and Toxic Manifestations of Sulfanilamide, J. A. M. A. **112**: 115 (Jan. 14) 1939.

5. Antopol, William; Applebaum, Irving, and Goldman, Lester: Two Cases of Acute Hemolytic Anemia with Autoagglutination Following Sulfanilamide Therapy, J. A. M. A. **113**: 488 (Aug. 5) 1939.

6. Rothstein, Isadore, and Cohn, Sidney: Acute Hemolytic Anemia, Autoagglutination, Toxic Hepatitis and Renal Damage Following Sulfathiazole Therapy: Case Report, Ann. Int. Med. **16**: 152 (Jan.) 1942.

7. Dameshek and Schwartz, footnotes 2 and 17.

8. Dameshek, William, and Miller, E. B.: Pathogenetic Mechanisms in the Hemolytic Syndromes, Arch. Int. Med. **72**: 1 (July) 1943.

9. Ham, T. H., and Castle, W. B.: Studies on Destruction of Red Blood Cells: Relation of Increased Hypotonic Fragility and of Erythrostasis to the Mechanisms of Hemolysis in Certain Anemias, Proc. Am. Philos. Soc. **82**: 411, 1940.

10. Widal, F., cited by Dameshek and Schwartz in Acute Hemolytic Anemia.[7]

11. Dameshek, William; Greenwalt, T. J., and Tat, R. J.: Erythroblastosis Fetalis—Acute Hemolytic Anemia of the Newborn, Am. J. Dis. Child. **65**: 571 (April) 1943.

coccus pneumonia.[12] Peterson, Ham and Finland[13] have recently reported "that the great majority of the patients with primary atypical pneumonia tested this season showed cold agglutinins in dilutions of serum or plasma ranging from 1:10 to over 1:10,000 at 0 C." It is possible that the combination of a high titer of abnormal autohemagglutinins and of a sulfonamide compound might result in agglutination and injury of red cells within the patient's own circulation and thus in the development of hemoglobinuria and acute hemolytic anemia. Since the hemagglutinins are generally more active at temperatures lower than 37 C., it is possible that they have their greatest effect either in peripheral vascular areas or in those organs, such as the spleen, which have a relatively static circulation. The development of in vitro hemolysis in case 3 when the clot was allowed to remain in the serum is perhaps evidence in favor of this assumption. It may be of considerable practical importance to take measures to prevent chilling of the patient with "virus" pneumonia and other conditions in which a cold hemagglutinin is found.

Similar mechanisms may be present in other hemolytic conditions, as in the "blackwater fever" of malaria.[14] The presence of an abnormal isohemagglutinin and autohemagglutinin in our case of infectious mononucleosis is of unusual interest. In this disease, for some reason thus far obscure, heterophilic agglutinins active chiefly against sheep red cells are present and have assumed great diagnostic importance. Isoagglutinins have thus far not been described. Since an abnormal isohemagglutinin was present in this case in association with acute hemolytic anemia and the use of a sulfonamide compound, it is reasonable to suspect a relationship between them.

The importance of the recognition of abnormal agglutinins cannot be overestimated. Since most testing for transfusion purposes is still performed by the slide technic at room temperature, the serum of the recipient with the cold agglutinin will routinely agglutinate the red cells of all persons tested, group O or otherwise. As in the present case, these individuals are normally classed as "incompatible" and a transfusion will often be postponed until the patient's condition is critical. Use of the Landsteiner-Levine test tube technic at both ice box (or room) and incubator temperatures is essential, not only because it demonstrates the "cold" nature of the agglutinin but because it is more sensitive than the slide method and will thus occasionally demonstrate a "warm" hemagglutinin or hemolysin which has previously been unrecognized. The agglutinin titer may occasionally be so high as to make testing of the patient's red cells for type difficult, owing to the small amount of hemagglutinin adsorbed to the red cells. This can usually be obviated by several washings of the patient's red cells with isotonic solution of sodium chloride.

It is well to remember that transfusions in cases of acute hemolytic anemia may be followed by severe reactions, although these may be diminished by the use of a careful cross matching technic. Thus as few transfusions as possible should be given, chief reliance being placed on the recuperative powers of the person's bone marrow. Since the hemagglutinin functions chiefly below 37 C., it is recommended that the blood be kept continuously warm from its first removal from the donor's circulation. It is best not to use bank blood, since the red cells are already more or less modified and thus more liable to injury. Alkalization with solution of sodium carbonate intravenously as recommended by DeGowin and his associates[15] may be of value in reducing the severity of the renal reaction.

The development of renal shutdown in some cases of acute hemolytic anemia is probably due to agglutination of red blood cells within the glomeruli and subsequent blockage of renal tubules, as with incompatible transfusion reactions. If anuria occurs, death may result, but milder degrees of renal impairment have been evidenced in a number of cases by an increase in the nonprotein nitrogen concentration of the blood.[16] It is possible that death from uremia has in some cases been erroneously thought to be due to precipitation of the drug or its acetylated derivative in the renal tubules.

The appearance of spherocytosis and increased hypotonic fragility in experimental and acquired hemolytic anemias has already been commented on in previous papers. The conception that spherocytosis represents an inherent fault in red cell formation in the bone marrow has been adequately disproved through both experimental and clinical observations.[17] We have shown that the spherocyte is a mature red cell which has been injured by the activity of a hemolytic agent. Thus spherocytosis, long considered pathognomonic of familial hemolytic jaundice, may occur in various hemolytic syndromes and—as in these cases—in the initial and active stages of the acute hemolytic reactions associated with the sulfonamide compounds.

A word regarding terminology: The type of abnormal isoagglutinin described is active not only against all types of human red blood cells but against those of the patient and to some extent against those of other animal species. Thus it might be called a "panagglutinin," although the term autoagglutinin has usually been used. Since the various terms have often been indiscriminately and interchangeably used and since the agglutinins are generally more effective at temperatures lower than 37 C., it is suggested that the term "cold hemagglutinin" be utilized.

SUMMARY

Severe hemolytic reactions occurred in 3 cases of acute infectious disease in which sulfadiazine and sulfathiazole had been used. They were associated with the presence in the blood of potent cold hemagglutinins, which were also active against the patient's own red blood cells (autoagglutinin). In 2 cases, so-called virus pneumonia was present; in the third, a case of infectious mononucleosis, potent heterophile sheep cell agglutinins were also found. It is probable that both the drug and the hemagglutinins were causally related to the sudden development of intravascular hemolysis with hemoglobinuria and acute hemolytic anemia. Recognition of the presence of a cold hemagglutinin is important both diagnostically and therapeutically, especially from the standpoint of possible transfusions. Chilling of the patient with "virus" pneumonia should be avoided.

113 Bay State Road.

12. Singer, Karl, and Dameshek, William: Symptomatic Hemolytic Anemia, Ann. Int. Med. **15**: 344 (Sept.) 1941.
13. Peterson, O. L.; Ham, T. H., and Finland, Maxwell: Cold Agglutinins (Autohemagglutinins) in Primary Atypical Pneumonias, Science **97**: 167 (Feb. 12) 1943.
14. Henstell, H. H.: The Presence of an Autoagglutinin in a Case of Blackwater Fever, Personal communication to the author.
15. DeGowin, E. L.; Warner, E. D., and Randall, W. L.: Renal Insufficiency from Blood Transfusions, Arch. Int. Med. **61**: 609 (April) 1938.
16. Quick, E. D., and Lord, F. D.: Acute Hemolytic Anemia Following Sulfathiazole Therapy, J. A. M. A. **117**: 1704 (Nov. 15) 1941. Wolcott, G. L.: Azotemic, Acidosis, Anemia and Leukocytosis Following Sulfanilamide Therapy, Internat. Clin. **2**: 47 (June) 1941.
17. Dameshek, William, and Schwartz, S. O.: Hemolysins as the Cause of Clinical and Experimental Hemolytic Anemias, Am. J. M. Sc. **196**: 769 (Dec.) 1938; Acute Hemolytic Anemia (Acquired Hemolytic Icterus, Acute Type), Medicine **19**: 231 (May) 1940.

ACUTE TOXIC NEPHROSIS

A CLINICAL AND LABORATORY STUDY BASED ON A CASE OF CARBON TETRACHLORIDE POISONING

A. C. CORCORAN, M.D.
R. D. TAYLOR, M.D.
AND
IRVINE H. PAGE, M.D.
INDIANAPOLIS

Acute parenchymatous renal injury results from the toxic action of a large number of unrelated substances. Their classification is neither easy nor indeed rewarding, for in most instances the clinical pattern of the poisoning is very similar. Even the microscopic differences in the kidney are not very great. Mercurial nephrosis is selected by Fishberg[1] as the typical instance of this type of renal disease; it is of course the one most frequently seen in practice. Nephrosis due to ethylene glycol, dioxane, tartrates and the like is much less common. The renal lesions that develop during cholemia or after intravascular hemolysis or burns or crushing injuries should also be considered under this general heading, since they share a "toxic" cause and a common clinical pattern of proteinuria, oliguria, edema, hypertension and azotemia with more or less characteristically depressed consciousness, and at autopsy the kidneys show epithelial degeneration.

The present report is an analysis of events in a case of renal injury due to the inhalation of carbon tetrachloride. Our purpose is to associate the renal, cardiovascular and symptomatic expressions of toxic nephrosis. We realize that carbon tetrachloride is not often thought of as a renal poison and that, like every other poison, it has certain distinctive features. Still the course of the disease in this patient is so like that in most cases of toxic nephrosis of moderate severity that the observations made can apply generally.

METHODS OF STUDY

The course of the renal lesion was followed by (1) routine urinalyses, (2) measurement of urinary output, (3) determinations of blood urea nitrogen and (4) urea clearance, (5) estimation of urinary concentrating power and count of the urinary sediment by the method of Addis[2] and (6) measurement of the plasma clearances of diodrast and inulin and of functioning tubular secretory capacity for diodrast (Tm_D).

Measurements of diodrast and inulin clearance and Tm_D were made substantially as described by Smith, Goldring and Chasis.[3] Diodrast-iodine and inulin in plasma and urine were determined by the methods of Corcoran and Page.[4]

Cardiovascular changes were demonstrated by (1) determinations of arterial pressure (twice daily during hospitalization), (2) clinical examination of the heart, retinal vessels and other organs, (3) electrocardiography, (4) thoracic fluoroscopy and roentgen orthocardiography and (5) ballistocardiographic measurement of cardiac output (method of Starr, Rawson, Schroeder and Joseph[5]).

The general clinical study was based on a careful history and physical examination, daily observation of progress during hospitalization and frequent examination thereafter.

PROTOCOL

A white man aged 36, a welder, spent four hours straightening and welding a bent gasoline tank into which he sprayed carbon tetrachloride from time to time to prevent an explosion. At midnight, when he finished, he felt weak and nauseated and, although it was a cold winter night, he had to keep his car window down to keep awake on the 2 mile drive to his home. He went to bed at once and was awakened in about four hours by excruciating headache and generalized painful muscular stiffness, at which time he also noticed difficulty in breathing. He vomited copiously that morning, and for three days he did not eat or drink because of immediate and violent emesis on swallowing. He did not void more than

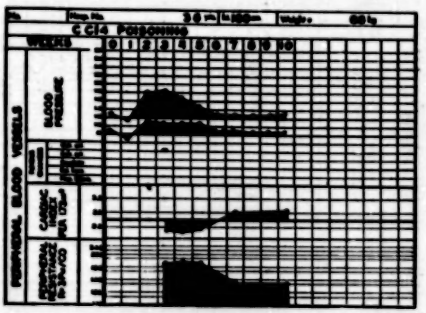


Chart 1.—Clinical course in a case of toxic nephrosis due to carbon tetrachloride and special observations on the peripheral blood vessels. The observations extend over a period of ten weeks. The blood pressure measurements indicated between the second and seventh weeks are weekly averages of two daily readings. Cardiac index = cardiac output per square meter per minute. Peripheral resistance is calculated from mean arterial pressure and cardiac output. The bases of the observations are described in the text.

1 or 2 teaspoons of dark urine during the first two days and a cup more or less on both the third and fourth days. He passed about a pint of urine on the fifth day. He was able to eat a small amount that day also. His nose bled on the fifth day for several minutes, but he tried to go back to his work. He found that weakness and muscle pain—particularly in the back of the neck—prevented him working more than one hour. The sixth day he noticed that his ankles and eyes were puffy and his abdomen was distended. Proteinuria was discovered. He had eaten little because of anorexia and occasional vomiting but by the ninth day had gained about 15 pounds (6.8 Kg.) over his normal weight. His blood pressure that morning was 180/114; at a routine examination six months before it had been found to be 130/90, and it was only 118/72 on the first day of his illness.

On admission to the Lilly Clinic on the ninth day of illness he was obviously very ill. His conjunctivas were hyperemic; his face, body and extremities were pasty and bloated and his voice was hoarse. He complained greatly of pain along

The patient was referred to the authors by Dr. Emmett B. Lamb.
From the Lilly Laboratory for Clinical Research, Indianapolis City Hospital.
Assistance was given the authors by Mrs. E. Bowers Alward, R.N., Mr. Truman Woodmansee, B.S., Miss Mary J. Armstrong, B.S., and other associates in the Lilly Clinic.

1. Fishberg, A. M.: Hypertension and Nephritis, ed. 4, Philadelphia, Lea & Febiger, 1939.

2. Addis, Thomas, and Shevky, M. C.: A Test of the Capacity of the Kidneys to Produce Urine of High Specific Gravity, Arch. Int. Med. 30: 539-562 (Nov.) 1922.

3. Smith, H. W.; Goldring, William, and Chasis, Herbert: The Measurement of the Tubular Excretory Mass, Effective Renal Blood Flow and Filtration Rate in the Normal Human Kidney, J. Clin. Investigation 17: 263-278 (May) 1938.

4. Corcoran, A. C., and Page, I. H.: Applications of Diphenylamine in the Determination of Levulose in Biological Mediums. I. The Determination of Inulin, J. Biol. Chem. 127: 601-608 (March) 1939. The diodrast-iodine method will appear shortly in the Journal of Laboratory and Clinical Medicine. It embodies the iodine electrophotometry described by Flox, Jack; Pitesky, Isadore, and Alving, A. S.: A Direct Photoelectric Colorimetric Method for the Determination of Diodrast and Iodides in Blood and Urine, J. Biol. Chem. 142: 147-157 (Jan.) 1942.

5. Starr, Isaac; Rawson, A. J.; Schroeder, H. A., and Joseph, N. R.: Studies on the Estimation of Cardiac Output in Man and of Abnormalities in Cardiac Function, from the Heart's Recoil and the Blood's Impact; the Ballistocardiogram, Am. J. Physiol. 127: 1-28 (Aug.) 1939.

the ligamentum nuchae and moderately of difficulty in breathing. His nose showed evidence of recent minor epistaxis. The optic disks were slightly reddened and the retinal arteries and arterioles constricted (grade 1 plus). Nothing abnormal was revealed by examination of the heart and lungs. The thrust of the apex beat was increased (grade 2 plus). The blood pressure was 174/114. The abdomen was moderately distended with fluid and gas. The liver was not palpable.

In spite of the absence of physical abnormalities in the chest a roentgenogram showed a small amount of fluid in both pleural cavities and the lung markings were increased in a manner which suggested irritative pulmonary edema. The heart and great vessels were not abnormal. An electrocardiogram (eleventh day of illness) showed a low QRS complex in the three standard and one (CR 4) precordial leads. The R wave of lead CR 4 measured 0.5 mm. The changes were interpreted as myocardial damage consistent with anterior cardiac infarction. An electrocardiogram on the twenty-sixth day was entirely normal.

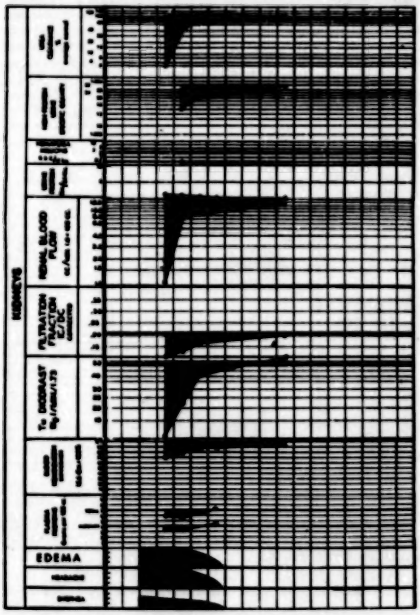


Chart 2.—Special observations on the kidneys.

His blood showed 4.09 million red and 11,400 white blood cells per cubic millimeter; hemoglobin was 66 per cent of normal. Plasma bilirubin was 0.5 mg. per hundred cubic centimeters and the icterus index normal. The urine contained a trace of urobilinogen. Plasma protein content was 5.9 Gm. total and 3.7 Gm. albumin per hundred cubic centimeters. He excreted 0.38 Gm. of hippuric acid during one hour after the intravenous administration of 1 Gm. of sodium benzoate on the tenth day. At this time the blood urea nitrogen was 73 mg. per hundred cubic centimeters and urea clearance about 5 per cent of normal. On the twenty-sixth day the hippuric acid excreted during the test amounted to 1.1 Gm.

An Addis test done on the twenty-first day of illness revealed a maximum nonprotein urinary specific gravity of 1.014, a protein content of 1.2 Gm. in twenty-four hours and excretion of red and white blood cells and casts within normal limits.

The results of some of these, and of other examinations, are shown graphically in the accompanying charts and some of them are tabulated.

An unexpected finding was made on the twenty-fifth day of the illness when, in connection with another study, the patient was given 0.2 cc. of 1:5,000 epinephrine intravenously with an immediate resultant rise in arterial pressure from 160/100 to 270/140. The pressure remained at this level for about ten minutes and was maintained there by four succeeding doses of 0.2 cc. during the next twenty minutes. The pressure fell slowly during the next half hour, but the patient continued to complain of severe headache and nervousness for twelve hours after the injection. In comparison with other normal subjects observed during this study, this patient's sensitivity to epinephrine was more than five times greater.

The course throughout the period of observation was one of progressive improvement, with apparent complete recovery at the end of about two months. An adequate diet was supplemented with a vitamin preparation; in addition, 400,000 units of vitamin A was given daily during his three weeks of hospitalization. The extra vitamin A was given empirically because of the increased renal function which sometimes appears in hypertensive patients during treatment with this substance.[6] No other special treatment was given.

COMMENT

The interest of this case falls under two headings: (1) the significance of carbon tetrachloride as the specific intoxicant and (2) the general characteristics of toxic nephrosis which it exemplifies.

Carbon Tetrachloride Nephrosis.—This topic has been recently reviewed in some detail by Smetana[7] and will be touched on here only because it is neither widely nor sufficiently realized that carbon tetrachloride is capable of causing renal injury. In his review, Smetana collected reports of 141 cases of carbon tetrachloride poisoning, in 33 of which renal symptoms were present. It appears that the probability of toxic nephrosis is doubled when the intoxication occurs by inhalation rather than by oral ingestion, since 27 of the 33 cases of renal injury developed among the 99 cases in which exposure was respiratory.

The symptoms and laboratory findings of this condition have been tabulated by Hagen, Alexander and Peppard.[8] Briefly, it is distinguished by (1) immediate effects of narcosis reflecting injury to the central nervous system and irritation of mucous membranes; (2) delayed effects (twelve to thirty-six hours) including headache and mucosal irritation (respiratory, conjunctival, gastric) with hepatitis and a curious painful muscular rigidity, and (3) late effects (two to eight days) including the foregoing with evidence of a hemorrhagic diathesis and toxic nephrosis (proteinuria, oliguria, hematuria and cylindruria) with generalized edema, hypertension, clouded mental state and azotemia. The case reported by them is that of a man who inhaled the fumes of carbon tetrachloride after its use as a fire extinguisher. Definite evidence of hepatic damage developed but otherwise his general course was very like that of our patient. Indeed, it has been suggested[7] that the symptoms are sufficiently characteristic to prompt inquiry as to exposure to this chemical in the absence of a definite history.

It will be gratifying if the industrial exposure of unskilled workers during the present acceleration of

6. Taylor, R. D.; Corcoran, A. C., and Page, I. H.: The Effect of Vitamin A on Blood Pressure and Renal Function in Hypertensive Patients, Central Soc. Clin. Research **15**:73-74 (Nov.) 1942.

7. Smetana, Hans: Nephrosis Due to Carbon Tetrachloride, Arch. Int. Med. **63**:760-777 (April) 1939.

8. Hagen, W. S.; Alexander, H. A., and Peppard, T. A.: Toxic Effects of Carbon Tetrachloride; Report of Case, Minnesota Med. **23**: 715-718 (Oct.) 1940.

production does not result in other similar cases. Fortunately, recovery nearly always occurs. It is usually considered to be complete, but we believe that ours is the first case in which a detailed study of renal function has been done and convincing evidence obtained of renal restitution to integrity.

The insignificance of hepatic damage is particularly striking in our case in view of the severe renal disease. The patient had not been jaundiced at any time during his illness. On the ninth and tenth days there was neither clinical nor chemical evidence of hepatic injury. If the presence of only a trace of urobilinogen in the urine is ascribed to failure of excretion by the coexistence of severe renal with mild hepatic damage, still the hippuric acid test indicates normal hepatic synthesis from the sodium benzoate when the amount excreted is corrected for renal damage in the manner suggested by Kohlstaedt and Helmer,[9] i. e. by reference to the concurrent urea clearance.

Since carbon tetrachloride may form phosgene on heating, persons exposed to its heated fumes, as was our patient, may have the complication of phosgene poisoning in the mucosal and pulmonary irritation which usually develops. However, such irritation occurs even after exposure to the unaltered substance.

Toxic Nephrosis.—The renal injury which may follow exposure to toxic substances is of particular interest. Here, in contrast to acute Bright's disease, the injury is primarily epithelial and not vascular. Clinically, however, the syndrome differs only quantitatively from glomerulonephritis in its relationships of proteinuria, pyuria, cylindruria, oliguria, hypertension and edema. Since the nephron is the structural unit of renal function and damage within it, whether epithelial or vascular, extends to the whole nephron, the gross clinical and functional patterns of acute toxic nephrosis and acute glomerulonephritis are very similar.

The injury probably begins with contact of the toxin and epithelial renal cell at the cell's tubular surface, where the poison is apt to be more concentrated than it is in blood or interstitial fluid. When the injury is largely to the cells of the proximal tubule, as it is with mercury or tartate, it may be that the toxins have been concentrated within the cell by active reabsorption much as is dextrose in this area. At least tubular fluid is still dilute at this point and the concentration of the toxin is probably not at a maximum. As would be expected, the more common site of injury is the epithelium of the distal tubule (e. g. carbon tetrachloride, ethylene glycol, dioxane, burns, traumatic anuria and transfusion hemolysis). Here the injury seems to depend simply on the concentration of the toxin in the tubule fluid as the result of abstraction of water from it in the proximal tubule and loop of Henle. The injured cells swell and desquamate. At first, as during diabetic coma,[10] the tubular barrier may be functionally disorganized, so that its reabsorption is no longer selective. However this may be, the injured cells themselves may impede the flow of tubular fluid and the kidney swells, partly from their obstructive effect and partly from the interstitial reaction at their injured basement membranes. Interstitial pressure is increased and effective intraglomerular filtration pressure is correspondingly reduced, as is also the rate of renal blood flow.[11] The swelling subsides as recovery begins; renal blood flow and filtration rate are increased. The normal basic architecture and particularly the stroma of the kidney are well preserved. Restoration to integrity is therefore possible if the initial injury is not too severe. New epithelium is formed and its functions of secretion (as shown in the Tm_D) and capacity for reabsorptive work (maximum specific gravity, chart 2) recover together. A similar parallelism of concentrating power and Tm_D exists in cases of essential and malignant hypertension.[12]

Functional Changes in Toxic Nephrosis Due to Carbon Tetrachloride

Day of Disease	Effective Renal Blood Flow (HD), Cc.	Plasma Diodrast Clearance per Min.	Plasma Inulin Clearance	Filtration Fraction	Tmd Mg. Diodrast Iodine per Min.	HD/Tmd, Cc. per Min.	Maximum Urinary Specific Gravity	Cardiac Index, 1 per Sq. M.	Blood Pressure, Mm. Hg
30	116	67.5	5.5	0.086	3.7	31.3	.....	1.80	157
32	774	464	56	0.12	23.8	32.5	1.014	1.76	126
52	859	510	81	0.16	41	20.7	1.022	2.52	109
64	1,120	649	128	0.20	65	17.2	1.030	2.64	116

Successive changes during toxic nephrosis in effective renal blood flow (calculated from diodrast clearance and hematocrit index), inulin clearance, filtration fraction (inulin/diodrast clearance ratio) maximum tubular capacity for secretion (Tmd), maximum nonprotein urinary specific gravity, the apparent volume of blood flow per unit of functioning tubular mass (HD/Tmd), cardiac index (liters of cardiac output per square meter of body surface per minute) and blood pressure (mean of systolic and diastolic brachial pressure). The values of clearance and Tmd are expressed as cubic centimeters or milligrams per minute per 1.73 square meters of surface. The values obtained in the fourth observation (64th day) are taken as normal.

The order in which these changes developed is shown in the values of diodrast and inulin clearance and Tm_D. The principles of their interpretation under normal conditions and in hypertension have been discussed elsewhere in some detail.[13] It will suffice to note that inulin clearance (IC) is equivalent to the rate at which water is filtered off from the renal plasma through the glomerular capillaries into the tubules (normally about 120 cc. a minute) while diodrast clearance (DC) is roughly equivalent to the rate at which plasma flows through functioning tissue, i. e. the volume of plasma from which filtration occurs (normally about 600 cc. a minute). If inulin clearance is divided by diodrast clearance (IC/DC), the result, known as filtration fraction, expresses the proportion of plasma water squeezed

9. Kohlstaedt, K. G., and Helmer, O. M.: A Study of the Hippuric Acid Excretion as a Test of Hepatic Function, Am. J. Digest. Dis. **13**: 459-466 (Sept.) 1936.

10. McCance, R. A., and Widdowson, E. M.: Functional Disorganization of the Kidney in Disease, J. Physiol. **95**: 36-44 (Feb.) 1939.

11. Linder, F., and Sarre, H.: Dekapsulation und Durchblutung der Sublimatniere, Ztschr. f. urol. Chir. u. Gynäk. **45**: 40-48, 1939.

12. Corcoran, A. C., and Page, I. H.: Quantitative Formulation of Maximum Urinary Specific Gravity, J. Mount Sinai Hosp. **8**: 459-468 (Jan.-Feb.) 1942.

13. White, H. L.: Observations on the Behavior of Diodrast in the Dog, Am. J. Physiol. **130**: 454-463 (Sept.) 1940. Corcoran, A. C., Smith, H. W., and Page, I. H.: The Removal of Diodrast from Blood by the Dog's Explanted Kidney, ibid. **124**: 333-337 (Sept.) 1941. Corcoran, A. C., and Page, I. H.: Renal Aspects of Experimental and Clinical Hypertension, J. Lab. & Clin. Med. **26**: 1713-1728 (Aug.) 1941. Smith, Goldring and Chasis.[5] Smith.[14]

out through the glomerular capillaries by intraglomerular pressure (normal, about 0.18). The clearance of diodrast is much higher than that of inulin because most of the diodrast present in renal arterial plasma is removed in one renal passage, so that little or none remains in renal venous blood, in contrast to about 20 per cent of the inulin and 10 per cent of urea. This efficient excretion of diodrast is maintained, as long as the plasma concentration of diodrast is not too high, by active secretion of diodrast from renal interstitial fluid through the cells of the proximal convoluted tubule to the tubular fluid. At high plasma concentrations the secretory capacity is exceeded and the amount reaching the tubular fluid and thence the urine attains a maximum. Just as one might estimate the cars of a railroad in terms of the freight they can carry, so the maximum capacity to transfer diodrast is conceived of as a measure of tubular mass and, by abbrevation, referred to as Tm_D (normally about 50 mg. of diodrast-iodine a minute [3]). The rate of effective renal plasma flow (DC) divided by tubular mass (Tm_D) expresses the rate at which plasma perfused that volume of renal tissue which can excrete 1 mg. of diodrast as iodine, and if the effective renal blood flow has been calculated from the plasma flow and hematocrit index (H) the unit volume of renal blood flow may be similarly calculated as HD/Tm_D (normally, about 23 cc. a minute).

In the present case, toxic nephrosis reduced effective renal blood flow (chart 2 and table) and caused a proportionately greater reduction in filtration rate and functioning tubular mass (Tm_D). From this it might seem as though a large increase in the volume of blood flowing to the units of uninjured functioning tubular tissue had occurred ($HD/Tm_D = 31$ and 32 cc. a minute in observations 1 and 2). That this apparent hyperemia is not real is suggested by the coexistence of hypertension, increased peripheral resistance, retinal arterial constriction and low absolute level of effective renal blood flow. The explanation for it probably depends on diodrast entering the renal interstitial fluid through a set of capillaries attached to a nonsecreting and injured nephron and then diffusing over to be excreted by a secreting and uninjured nephron. Diodrast clearance thus comes to exceed the true level of plasma flow to functioning and secreting nephrons. The measurement of Tm_D, in which transfer capacity is fully saturated, is not affected and the result is a high level of diodrast clearance in relation to Tm_D. The process has been termed "vicarious hyperemia" by Smith.[14] Since in such cases as this there is probably no hyperemia but rather ischemia, perhaps the term "vicarious clearance" might better convey the meaning of an altered significance of diodrast clearance. As originally visualized with reference to the renal changes of essential hypertension, this process was due to formation of "impotent nephrons" which filtered but could not secrete. The parallel reduction of filtration rate and tubular secretory capacity suggests that in this case of toxic nephrosis both filtration and secretion were temporarily in abeyance in many nephrons.

Decreased filtration rate and filtration fraction are also observed in eclamptogenic toxemia of pregnancy,[15] experimental glomerulonephritis [16] and acute and chronic Bright's disease.[17] In these conditions the glomeruli are known to show definite structural changes, and we have therefore tentatively attributed the decreased filtration rate and fraction to the formation of virtual shunts of blood through injured glomerular capillaries which are still canalized but no longer filter.

Others [18] have observed this phenomenon in preeclampsia and eclampsia and attributed it to afferent arteriolar vasoconstriction or renal edema. Its presence in some cases of toxic nephrosis—we have observed it in a case of mercurial nephrosis but not in another due to oil of tansy [19]—suggests at least that it depends on another mechanism than glomerular injury or afferent constriction—most probably renal edema. This, with or without tubular obstruction by detritus, increases intrarenal pressure and thus decreases the effective pressure of filtration. "Vicarious clearance" alone does not explain the severe depression of filtration fraction here observed.

Whatever the cause of the reduction in glomerular filtration rate, among its results are oliguria and sodium retention, which together lead to edema. In acute Bright's disease and eclampsia additional widespread irritative vascular injury is postulated as a basis both of edema and of cardiac injury. It is, to say the least, doubtful whether such a factor plays a role in toxic nephrosis, in which the injury is renal and not vascular but epithelial. The myocardial damage in our patient during his illness may therefore depend on some other factor than local vascular injury—possibly the acute hypertension which his heart was suddenly called on to maintain. A similar factor may play a role in eclampsia and acute Bright's disease.

The hypertension itself is of particular interest. As in most cases of toxic nephrosis, it did not develop in the first days of the renal injury, when renal blood flow is often greatly reduced,[11] but was delayed, perhaps until renal swelling had increased the intrarenal pressure. Such a view is in accord with the hypothesis that this hypertension is of renal origin and due to release of renin and formation of angiotonin in the blood [20] as the result of reduced intrarenal pulsation.[21] The mechanism has its parallel in the experimental

14. Smith, H. W.: Notes on the Interpretation of Clearance Methods in the Diseased Kidney, J. Clin. Investigation **20**: 631-635 (Nov.) 1941.

15. Corcoran, A. C., and Page, I. H.: Renal Function in Late Toxemia of Pregnancy, Am. J. M. Sc. **201**: 385-396 (March) 1941.

16. Fouts, P. J.; Corcoran, A. C., and Page, I. H.: Observations on the Clinical and Functional Course of Nephrotoxic Nephritis in Dogs, Am. J. M. Sc. **201**: 313-326 (March) 1941.

17. Unpublished observations.

18. Wellen, Irwin; Welch, Catherine A., and Taylor, H. C., Jr.: The Filtration Rate, Effective Renal Blood Flow, Tubular Excretory Mass and Phenol Red Clearance in Specific Toxemia of Pregnancy, J. Clin. Investigation **21**: 63-70 (Jan.) 1942.

19. On the third day of mercurial nephrosis a patient (B. P.) showed the following clearances: diodrast 246, inulin 23.5 cc. per minute, filtration fraction 0.09 Tm_D was 5.3 mg., diodrast-iodine, and dextrose Tm 37 mg. per minute. Blood pressure was 144/94. This patient recovered but further observations were not made. Tabulated here are the findings in a patient suffering from toxic nephrosis due to ingestion of oil of tansy. The nephrotoxic action of this drug is not generally recognized.

Day of Disease	Plasma Diodrast Clearance	Plasma Inulin Clearance	Filtration Fraction	Tm_D Mg. Diod.-Iodine per Min.	Mean Blood Pressure
4	42	11	0.26	2.08	98
11	223	44	0.19	12.4	110
30	469	90	0.20	18.0	108

20. Page, I. H.: Studies on the Mechanism of Arterial Hypertension, J. A. M. A. **120**: 757-762 (Nov. 7) 1942.

21. Kohlstaedt, K. G., and Page, I. H.: The Liberation of Renin by Perfusion of Kidneys Following Reduction of Pulse Pressure, J. Exper. Med. **73**: 201-216 (Aug.) 1940.

hypertension of fibrocollagenous perinephritis described by Page [22] in which also the renal parenchyma is compressed. Our patient's pronounced sensitivity to epinephrine—which on somewhat inadequate grounds is stated to be a general phenomenon in nephritis as compared to essential hypertension [25]—may suggest that another pressor system may have been operating, such as that described by Bing [24] in which renal anaerobiosis leads to formation of a pressor amine from dihydroxyphenylamine. However, the existence of such pressor systems under conditions compatible with life has not been established.

The coincidence of decreased cardiac output and electrocardiographic evidence of cardiac damage might suggest that injury has decreased output by causing cardiac insufficiency. The ballistocardiographic record resembles that seen in essential and malignant hypertension [23] and, during intravenous administration of angiotonin, the effector substance of the renal pressor system.[26] In cases of uncomplicated essential hypertension, as during administration of angiotonin or, apparently, toxic nephrosis, cardiac output decreases as peripheral resistance makes it more difficult for the heart to maintain a normal output and a greatly increased pressure. The decreased output is therefore more probably the result of incomplete cardiac adaptation than actual cardiac insufficiency.

SUMMARY

Because the essential lesion of toxic nephrosis is based on destruction of the epithelium of the nephron, its manifestations are much the same in spite of wide differences in the causative toxic agents. The clinical and functional characteristics of toxic nephrosis due to carbon tetrachloride, considered in detail in the report, therefore apply generally. The stroma of the kidney is left intact, so that complete recovery may occur by epithelial regeneration. The clinical manifestations of edema, oliguria and proteinuria are associated with decreased renal secretory capacity and with decreased renal blood flow and glomerular filtration rate. Analysis of data from diodrast and inulin clearances suggests that the injury extends temporarily to both the secretory and the filtering functions of the nephrons. The hypertension is presumably of renal origin and due to release of the renal pressor system (renin, renin-substrate, angiotonin). The resultant increase in peripheral resistance rather than a specific myocardial injury is the presumptive cause of the decrease in cardiac output present during the persistence of hypertension.

Clinical recovery is associated with a reversal of all these changes and their return to normal. In the case presented, renal damage was associated with pressor hypersensitivity to epinephrine.

22. Page, I. H.: The Production of Persistent Arterial Hypertension by Cellophane Perinephritis, J. A. M. A. **113**: 2046-2098 (Dec. 2) 1939.

23. Hülse, W., and Deicke, E.: Adrenalineversuche bei Hypertonien, Klin. Wchnschr. **3**: 1724 (Sept. 16) 1924.

24. Bing, R. J., and Zucker, M. L.: Formation of Pressor Amines in the Kidney, Proc. Soc. Exper. Biol. & Med. **46**: 343-347 (Feb.) 1941.

25. Taylor, R. D., and Page, I. H.: The Effect of Antipressor Kidney Extract, Angiotonin, Methyl Guanidine and Tyramine on Cardiac Output as Measured by the Ballistocardiograph in Hypertensive and Normal Persons, Am. J. M. Sc. **205**: 66-77 (Jan.) 1943.

26. Page, I. H., and Helmer, O. M.: A Crystalline Pressor Substance, Angiotonin, Resulting from the Reaction Between Renin and Renin-Activator, J. Exper. Med. **71**: 29-42 (Jan.) 1940.

BRONCHOSCOPY AND ASTHMATOID RESPIRATION

CAPTAIN STANTON A. FRIEDBERG
MEDICAL CORPS, ARMY OF THE UNITED STATES

Altered respiration of an asthmatoid type may result from a variety of clinical conditions which produce changes in the caliber of the bronchial lumen. The term asthmatoid respiration is used to imply a type of respiratory cycle in which the expiratory phase is accompanied by a wheezing sound similar to that heard in true bronchial asthma but for which there may be a number of different etiologic factors. My purpose in this paper is to indicate the diagnostic and therapeutic value of bronchoscopy in simulated asthmatic, or asthmatoid, breathing.

The initial impetus in the study of altered respiration, bronchoscopically considered, probably stems from Chevalier Jackson's classic description of the "asthmatoid wheeze." [1] Often quoted, the original words bear repeated emphasis: "The asthmatoid wheeze may be defined as a sound heard by placing the ear in front of the patient's mouth during expiration. It resembles the wheezing of an asthmatic patient but is drier. It is caused by the vibration of the air passing the foreign body in the bronchus." Lukens [2] in 1925 described the bronchoscopic findings in bronchial asthma and was one of the earlier writers to suggest diagnostic bronchoscopy on almost all asthmatic persons.

The investigation of the tracheobronchial tree in order to rule out conditions which might simulate asthma has been advised by many authors. Jackson [3] has reported a large series of foreign body cases in children erroneously diagnosed as asthma. Gaarde has been quoted as emphasizing that "to limit the study of the asthmatic patient to an allergic investigation, to investigation of the nose and throat, to a search for foci, or to a roentgenogram of the thorax, is to invite diagnostic and therapeutic failure." [4] Clerf [5] has pointed out that many patients present signs and symptoms which do not fit the textbook description of asthma and suggests "wheezing respiration" as a better term for atypical symptoms requiring endoscopic investigation. Consequently an ever increasing degree of attention is being directed to the importance of wheezing respiration in diseases other than bronchial asthma. Among these, foreign bodies in the air and food passages have been mentioned most frequently.[5] Laryngeal pathologic changes, tumors of the trachea or bronchi whether benign or malignant,[6] acute or chronic inflammatory processes involving the air passages,[7] strictures or stenoses may cause altered respiration of an asthma-

From the Presbyterian Hospital, Chicago.

1. Jackson, Chevalier: A New Diagnostic Sign of Foreign Body in Trachea or Bronchi, the "Asthmatoid Wheeze," Am. J. M. Sc. **156**: 625-636 (Nov.) 1918.

2. Lukens, R. M.: Bronchoscopy in the Treatment of Asthma, Laryngoscope **35**: 227-234 (March) 1925.

3. Jackson, Chevalier: Chronic Nonspecific Infections of the Lungs, J. A. M. A. **87**: 729-736 (Sept. 4) 1936.

4. Prickman, L. E., and Vinson, P. P.: Bronchoscopy in Asthma, J. Allergy **4**: 286-293 (May) 1933.

5. Clerf, L. H.: Present Status of Bronchoscopy in Bronchial Asthma, Ann. Int. Med. **9**: 1050-1056 (Feb.) 1936.

6. Overholt, R. H., and Rumel, W. R.: Clinical Studies of Primary Carcinoma of the Lung, J. A. M. A. **114**: 735-742 (March 2) 1940. Clerf, L. H., and Bucher, C. J.: Adenoma (Mixed Tumor) of Bronchus, Ann. Otol., Rhin. & Laryng. **51**: 836-850 (Sept.) 1942.

7. Gatewood, E. T.: Bronchoscopic Observations of Laryngotracheobronchitis, Virginia M. Monthly **68**: 600 (Jan.) 1937. Gittins, T. R.: Laryngotracheobronchitis in Children, Arch. Otolaryng. **30**: 491-498 (Oct.) 1942. Myerson, M. C.: Tuberculosis of the Trachea and Bronchus, J. A. M. A. **116**: 1611-1615 (April 12) 1941.

toid type. The common denominator in all these conditions is a narrowing of the airway. To the bronchoscopist falls the role of interpreter for pediatrician, internist, surgeon and roentgenologist, although a cooperative effort on the part of all is prerequisite.[8]

The explanation for a wheezing type of respiration in most cases is to be found in a consideration of the normal physiologic movements of the bronchi during respiration. Elongation and expansion occur during inspiration. In expiration these structures contract and shorten. Thus a pathologic process which narrows or partially blocks the bronchial airway will interfere principally with the egress of air. Because of an abnormal irregularity of the lumen plus a physiologic bronchial contraction the vibration of the outgoing air will produce an altered expiratory sound. This sound is most often wheezing in character.

In an attempt to emphasize further the bronchoscopic aspects of simulated asthmatic, or asthmatoid, breathing, the following case reports are presented:

REPORT OF CASES

Case 1.—J. O., a 2 year old boy, fell while eating popcorn and a momentary coughing spell ensued. Subsequently the child coughed frequently for several hours until brought to the Presbyterian Hospital. An expiratory wheeze was quite audible to the examiner's ear, 6 to 12 inches from the child's mouth. There was neither dyspnea nor cyanosis. A few wheezing rales were heard over both lung fields. Roentgenograms of the chest were normal.

Bronchoscopy was performed several hours later with a 5 mm. by 30 cm. instrument and without anesthesia. A shell-like object presented in the right main bronchus; one margin was apparently fixed to the medial wall, while the other, which was thin and frayed, moved with each expiratory motion. The wheezing expiratory sound was accentuated with the bronchoscope in situ. There was considerable diffuse tracheobronchitis. The free margin was grasped and rotated, and the object was removed. It was found to be a maize (popped corn) hull. No other particles were seen on completion of the examination.

On the following day there were scattered rales over both lung fields and a slight elevation of temperature. On the second postoperative day the chest was clear on clinical and roentgenographic examination, the temperature was normal and the child was discharged. There were no sequelae.

To the bronchoscopist the asthmatoid wheeze and the history of a choking spell made a diagnosis of foreign body fairly obvious. A suggestion to defer bronchoscopy was disregarded because of the potential danger of vegetable matter in the tracheobronchial tree. The signs of partial or complete bronchial obstruction[9] were absent, probably because of the exceedingly thin mobile margin of the hull and the fact that the tissue reaction had not reached its maximum.

Case 2.—V. C., a boy aged 16 months, was brought to the hospital for emergency treatment. There was an indefinite, though suggestive, foreign body history. There had been several periods of impending asphyxia with severe cough followed by subsidence of all symptoms except for a wheezing type of respiration. An asthmatoid wheeze, grossly audible on expiration, was the only finding on entrance. The larynx was exposed without anesthesia and a foreign object was seen in the subglottic space. During inspection its position suddenly changed as a result of cough and inspiration. A small bronchoscope was introduced and one half of a hard nut shell (pistachio) was quickly removed as it lay across the bifurcation of the trachea. All symptoms disappeared and the child was discharged on the following day.

8. Friedberg, S. A.: Endoscopy in the Diagnosis and Treatment of Diseases of the Chest, Illinois M. J. 81: 212-216 (March) 1942.

9. Jackson, Chevalier, and Jackson, C. L.: Bronchoscopy, Esophagoscopy and Gastroscopy, Philadelphia, W. B. Saunders and Company, 1934, p. 182.

The history of a shifting type of obstruction, with alternate episodes of impending asphyxia and relative freedom, left little time for roentgenograms. The asthmatoid wheeze was the all important indicator of some pathologic condition in the trachea. Shifting of the foreign body at the time of direct examination was doubtless a repetition of the events preceding admission.

Case 3.—E. B., a 4 year old girl, had been treated for asthma for one week without results. There was no history other than that the child had been well until two weeks prior and had since been having noisy breathing along with a progressively increasing difficulty in swallowing. Wheezing respiration was audible. Fluoroscopy disclosed the presence of a sizable metallic toy dog in the upper esophagus. The trachea was displaced anteriorly. On endoscopy much stagnant secretion was encountered in the pyriform sinuses and on entering the esophagus. The object was removed without trauma or undue respiratory embarrassment and the subsequent course was uneventful.

Only occasionally are esophageal foreign bodies of sufficient size to cause any considerable displacement of the trachea. The wheezing respiration in this case resulted from encroachment on the membranous posterior trachea with narrowing of the lumen and an overflow of secretions from an obstructed esophagus.

Case 4.—M. S., a 6 year old girl, had been having episodes of coughing and wheezing for six months. There was a family history of allergic disturbances. When first seen, her appearance was that of a child experiencing a typical asthmatic attack. There was a slight anemia and an elevation of the white blood count to 15,000 per cubic millimeter with 78 per cent polymorphonuclear forms, 20 per cent lymphocytes and 2 per cent eosinophils. Roentgenograms disclosed an area of increased density in the left lung with atelectasis of the lower lobe and fixation of the left diaphragm.

On bronchoscopy the mucosa of the left main bronchus was observed to be reddened and hypertrophic. Near the termination of this bronchus there was a definite narrowing which yielded on passage of the tube. A black foreign object was encountered and was displaced slightly by the suction tip, resulting in the outpouring of a profuse foul secretion. The object was engaged with a side curved forceps but crumbled immediately. Black fragments were removed; other pieces came away with suction and coughing. All evident particles were removed and thorough aspiration was carried out. The entire mass was sent to the laboratory. Positive tests for iron and traces of lead were obtained. Because of one minute intact metallic fragment, it was concluded that the material represented the corrosive products of an iron carpet or upholstery tack. Subsequent bronchoscopic and roentgenographic studies showed complete resolution of the pulmonary pathologic condition and the child has been free from "asthma" for one year.

Asthmatic symptoms, present for six months, were outstanding and the familial allergic history was misleading. The findings were those of partial bronchial stenosis due to the prolonged sojourn of a foreign body, corrosion of the object with bronchial obstruction, atelectasis and the typical "drowned lung." All symptoms and findings disappeared on removal of the offending agent.

Case 5.—Mrs. G. B., aged 38, had been troubled by a cough and wheezing at night for several months. The symptoms were progressing in severity and no conclusions could be drawn as to the cause. An investigation of allergic factors proved negative. There was no evidence of any contributory pathologic condition in the upper air passages. Roentgenograms of the chest were interpreted as normal. The patient insisted that her wheezing respirations were aggravated by lying on her left side, and this was confirmed clinically. There were no physical signs of altered breath sounds except for a grossly audible asthmatoid wheeze.

Reddening and thickening of the mucosa of the left main bronchus were noted. A foreign object was encountered about

3 cm. from the tracheal bifurcation. Several fragments of calcareous material were obtained and the entire mass was then removed with a side curved forceps. The object proved to be an irregular broncholith measuring 1.5 by 1.25 by 0.75 cm. A biopsy specimen of the adjacent thickened mucosa was obtained.

The broncholith was radiopaque. A chest film taken following bronchoscopy appeared identical to the original film. The reason for failure to observe the stone roentgenographically was thought to be its proximity to the dense hilar shadows.

Microscopic examination of the bronchial mucosa disclosed a chronic inflammatory reaction with hemosiderin particles engulfed in numerous macrophages.

The patient has been free from all asthma-like symptoms for fourteen months. After careful requestioning she recalled a severe coughing spell which occurred while eating Christmas dinner two years previously. The effects of this attack lasted several hours. The possibility of her having aspirated food particles which formed the nucleus of the broncholith has been the only etiologic factor thus far available. The subject of broncholiths and "stone asthma" has been well described by Pendergrass and de Lorimier.[10]

Although this patient's symptoms were those of typical bronchial asthma with accentuation of discomfort during cold weather and at night, one suggestive discrepancy was the aggravation which resulted on lying on her left side. The negative roentgenogram was misleading but fortunately not dissuasive. This and the preceding case would seem to support the rather radical contention of some authors that every case of asthma is entitled to diagnostic bronchoscopy.

CASE 6.—Mrs. R. S., aged 41, had been having bronchial asthma of an allergic nature for thirteen years. While on vacation she suddenly developed pain in the left chest and a productive cough. This was not preceded by any choking episode, respiratory infection, dental care or illness of any type. When brought to Chicago there were physical and roentgenographic findings of a rapidly cavitating abscess of the left upper pulmonary lobe. Bronchoscopy was requested three weeks after the onset of symptoms. Inspection of the left main bronchus and upper lobe orifice revealed no evidence of obstruction. Passage of a flexible catheter and aspiration of a large quantity of foul secretion from the left upper lobe resulted in subsidence of the daily temperature elevation. External drainage of the cavity was carried out because of the persistent cavity. The diagnosis was anaerobic pulmonary abscess, contributory cause unknown.

This case is of interest for several reasons. Considering the prevalence of bronchial asthma, with its attendant bronchial and bronchiolar obstruction from edematous mucosa and mucous plugs, atelectasis and lung abscess are infrequent complications. Bronchiectasis is more commonly associated with asthma and may have its inception in atelectasis, but Clerf,[11] as a result of wide experience, stated that he could not recall having seen or heard of lung abscess secondary to bronchial asthma. In view of the apparent benefit from bronchoscopy in this case and the well known salutary effects on early lung abscesses, it is interesting to speculate on the outcome had endoscopic drainage been performed at the onset of symptoms or shortly thereafter. Finally, bronchoscopy was an important element in the exclusion of organic or accidental bronchial obstruction as a predisposing etiologic factor.

CASE 7.—A. C., a man aged 48, had been troubled by a mucus productive cough for about five years. At times there would occur episodes of asthmatic breathing, followed in several days by the expectoration of considerable purulent secretion. Bronchoscopy during one of the asthmatic spells disclosed a stenosis of the left lower lobe bronchus through which only a thin aspirator could be passed. There was a generalized chronic tracheobronchitis. Improvement in symptoms followed the procedure. Bronchograms subsequently verified the impression of bronchostenosis. The lingula branch of the left upper lobe also was involved.

Studies on this patient could not be continued, but it was my impression that the situation was analogous to the type of bronchostenosis described by Prickman and Moersch.[12] Though the patient had a chronic cough, asthmatic breathing appeared only at intervals and seemed to be on the basis of bronchial narrowing.

CASE 8.—Miss L. F., aged 32, had been under treatment for pulmonary tuberculosis for two years. An exacerbation of symptoms, including periodic attacks of wheezing respiration, was responsible for a request for bronchoscopic study. Examination disclosed an infiltrating tuberculous lesion just above and involving the primary subdivisional area of the left main bronchus.

Bronchoscopy is now regarded as an indispensable adjunct in the treatment of tuberculosis. The ever widening concept of endoscopy is borne out by the realization that only a short time ago pulmonary tuberculosis was looked on as a contraindication to the procedure.

SUMMARY AND CONCLUSIONS

1. Altered respiration of an asthmatoid type may result from a variety of clinical conditions which produce changes in the caliber of the tracheobronchial lumen.

2. Pathologic narrowing of the bronchial lumen, coupled with physiologic shortening and contraction of the bronchi, probably combine to produce an abnormal vibration of the outgoing air during expiration. The resultant sound is often wheezing in character.

3. Illustrative cases indicate the diagnostic and therapeutic value of bronchoscopy in simulated asthmatic breathing.

4. Endoscopic investigation is warranted in any case of atypical bronchial asthma which does not respond readily to diagnosis and therapy.

10. Pendergrass, E. P., and de Lorimier, A. A.: Broncholiths and Stone Asthma, Radiology **35**:717-722 (Dec.) 1935.
11. Clerf, L. H.: Personal communication to the author in 1941.
12. Prickman, L. H., and Moersch, H. J.: Bronchostenosis Complicating Allergic and Infectious Asthma, Proc. Staff Meet., Mayo Clin. **16**: 305-306 (May 14) 1941.

Immersion Foot.—Submarine warfare has focused attention on immersion foot—a vascular disease of the extremities due to exposure. This condition, seen in survivors from ships torpedoed in the cold waters of the North Atlantic, is in no way different in its etiology and pathology from the trench foot observed in the last war. In either case the lesion is caused by temperatures sufficient to chill but not to freeze the tissues. Experimentally, exposing an extremity to cold causes formation of edema fluid with a relatively high protein concentration. This is interpreted as meaning that cold insufficient to freeze the tissues can produce an increase in capillary permeability and an inflammatory exudate. The edema formation is roughly proportional to the degree of cold and to the duration of exposure. . . . Shipwrecked sailors exposed to cold for prolonged periods develop swollen, discolored, anesthetic and even pulseless extremities, the distal portions usually being affected most severely. . . . Men habitually exposed to warm environments, such as those of the Mediterranean and African races, and those employed in boiler rooms, apparently are more susceptible than others to immersion foot, but there is no evidence that this susceptibility is due to a preexisting vascular abnormality. However, one episode of immersion foot apparently renders the feet less resistant to further exposure to cold.—Wilkins, Robert W., and Friedland, Carl K.: Peripheral Vascular Disease, *New England J. Med.*, July 1, 1943.

Clinical Notes, Suggestions and New Instruments

ARACHNODACTYLY COMPLICATED BY DISLOCATED LENS AND DEATH FROM RUPTURE OF DISSECTING ANEURYSM OF AORTA

Major Lewis E. Etter
Medical Corps, Army of the United States
and
L. Pellman Glover, M.D., Altoona, Pa.

An interesting syndrome called Marfan's disease for the French physician of that name who first drew attention[1] to it in 1896 was encountered in a young man in the course of our examination of selectees at this station. The descriptive name arachnodactyly was given to the syndrome by another Frenchman, Achard,[2] because of the spider-like appearance of the extended fingers. Of unknown etiology, it has been described as being both familial and hereditary. As the dystrophy affects skeletal muscle structure as well as visceral organs, it has been thought by some to arise from an embryologic defect in the mesoblastic tissue, and by others to be due to faulty secretion by the hypophysis.

Fig. 1.—Note height and elongation of extremities. Spider-like appearance of left hand is well shown.

In discussing two additional theories of origin, namely germinal and due to "status dysraphicus," Marfan[3] concluded that not any are satisfactory and all can be assailed by critics.

Our subject was a youth of 21, eldest of a family of five children, who was born in Brazil of German parents, each of whom is healthy. It was first noticed that he had trouble with his eyes at about 9 years, and he had been wearing glasses since that time. He had always been tall for his age and grew unusually fast.

At the age of 14 he first developed pains in the muscles and joints, but the attack was not sufficiently severe to cause him to stay in bed. This was passed off as being due to growing pains and it was not until seven years later that symptoms of heart disease were manifested. These first came on as breathlessness and pains in the chest, precordium and neck.

Besides the parents there are three brothers and one sister living and well. We examined the younger brother, aged 15, who was tall for his age (69 inches, or 175 cm.) but could find no evidence of eye, skeletal or visceral defect. The other children were of average size and development.

His physiognomic features showed most of the typical findings of the syndrome, namely bossing of the frontal eminences, prominent supraorbital ridges, protrusion of the upper half of the ears, large chin, high arched palate, long slender teeth, very long hands and feet, small amount of subcutaneous fat and pronounced degree of muscle hypotonia with ligamentous relaxation.

The degree of ligamentous relaxation (double jointedness) was extreme in this case as the boy could lock both his legs behind his head and lay his thumb back along the wrist and across the inside of his closed fist with the distal phalanx protruding.

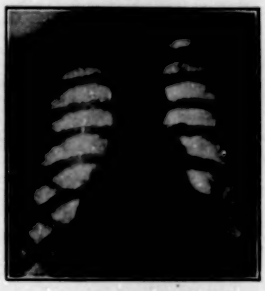


Fig. 2.—Absence of normal indentation between right auricle and ascending aorta suggestive of aneurysm.

Some of these features can be noted in the accompanying photograph taken within a year before his death (fig. 1). The height and elongation of extremities is well shown, particularly the spider-like appearance of the left hand as it is extended. He wore size 11½ shoes.

He was 76 inches (193 cm.) tall and weighed 165 pounds (75 Kg.). There was no scoliosis, kyphosis or lordosis as is often observed in these cases, but the costochondral ridges were prominent and he was pigeon breasted.

Physical examination showed, in addition to the foregoing, the rather unusual finding of essentially normal vision in the right eye with visual acuity of 20/50 corrected to 20/30 (myopia) and a normal lens and eyeground. The left eye showed a normal ocular rotation and no squint. The globe was equal to the right in size. Vision was limited to counting fingers at 5 feet. The pupil was round. On dilatation the lens was subluxated downward and tilted slightly backward at 12. Congenital opacities were present in the periphery which partly caused the poor vision, correction coming only to 20/200. The optic nerve and fundus were negative.

Fig. 3.—Metacarpals and phalanges elongated with spider-like spread of digits. Epiphyses all closed.

A report secured from an optometrist who first examined the boy in February 1939 gave vision in left eye corrected to 20/200 by 2.25 cylinder axis 120. He did not notice a subluxated lens at that time. (About 50 per cent of the cases show some eye

From the Medical Examination and X-Ray sections, U. S. Army Recruiting and Induction Station, Altoona, Pa.

Owing to lack of space, this article is abbreviated here by omission of a table summarizing five autopsies. The complete article appears in the authors' reprints.

1. Marfan, A. B.: Un cas de déformation congénitale des quartre membres plus prononcée aux extrémités characterisée par l'allongement des os avec un certain degré d'amincissement, Bull. et mém. Soc. méd. d. hôp. de Paris **13**: 220, 1896.

2. Achard, C.: Arachnodactylie, Bull. et mém. Soc. méd. d. hôp. de Paris **19**: 834-840 (Oct.) 1902.

3. Marfan, A. B.: Arch. d'opth. **9**: 881 (Oct.) 1938.

abnormality, as dislocation of the lens of the eye, often bilateral, and pathologic change in the structure of the heart, either congenital or acquired from rheumatic infection.[4])

The remainder of his physical examination was essentially negative except for findings in the cardiovascular system. He was found to have all the classic signs and symptoms of aortic insufficiency. The cheeks were pale and the pulse was of the collapsing water hammer type.

Examination of the chest showed a heaving precordium with the point of maximum impulse in the sixth interspace, anterior axillary line. There was a slight systolic and loud diastolic murmur at the base of the heart and aortic orifice transmitted into the neck and to the left of the sternum.

Capillary pulsations were present in the finger nail beds, and Duroziez's sign could be heard over the femoral and brachial arteries. His blood pressure measured in millimeters of mercury was 140 systolic and 30 diastolic.

The liver and spleen were not enlarged and there was no edema of the extremities. Functional capacity might be graded class III (New York Heart Association). Laboratory examination showed blood Wassermann reaction and urinalysis negative.

Roentgenographic examination of the heart in the anteroposterior view showed no definite evidence of aneurysm except

Fig. 4.—Metatarsals and phalanges elongated with characteristic inward deviation of terminal phalanges of outer three toes.

the disturbance of the aortic and right auricular tangents.[5] This resulted in absence of the normal indentation between the right auricle and the ascending aorta in the cardiac silhouette (fig. 2). There was a smooth edged, slightly concave shadow extending into the neck suggestive of extension of the aneurysm along the innominate artery such as seen in 1 case described by Wood, Pendergrass and Ostrum.[6] There was loss of the normal concavity of the left cardiac border. The transverse cardiac diameter was just within the upper limits of normal with beginning enlargement of the left ventricle. The lungs were clear.

Films taken of the hands and feet showed the spider-like spread of the digits (figures 3 and 4). The metacarpals, metatarsals and phalanges were unusually elongated, but it will be noted that all epiphyses were closed. A characteristic feature is seen in the inward deviation of the terminal phalanges of the outer three toes.[7]

4. Futcher, Palmer H., and Southworth, Hamilton: Arachnodactyly and Its Medical Complications, Arch. Int. Med. **61**: 5 (May) 1938.
5. Polevski, J.: The Heart Visible, Philadelphia, F. A. Davis Company, 1934, pp. 158-159.
6. Wood, F. C.; Pendergrass, E. P., and Ostrum, H. W.: Dissecting Aneurysm of the Aorta, Am. J. Roentgenol. **28**: 442-444 (Oct.) 1932.
7. Stewart, R. M.: A Case of Arachnodactyly, Arch. Dis. Childhood **14**: 64 (March) 1939.

Five days after our examination here, while the youth was sitting in a classroom of a radio school in Philadelphia, he suddenly collapsed and died instantly. An autopsy report furnished us by the coroner of Philadelphia County revealed aortic valvular regurgitation with pronounced enlargement of the heart and massive hemopericardium; chronic dissecting aneurysm of the ascending arch of the aorta with acute fatal rupture into the pericardial sac.

COMMENT AND SUMMARY

It has been stated by most authors that a characteristic feature of Marfan's disease has been some weakness of the cardiovascular system, frequently congenital valvular disease or valvular disease as a sequel to rheumatic polyarthritis. In none of the cases so far reported has a complication such as seen in this case been noted. Autopsies in these cases are rare, ours being the fifth reported to date. Futcher and Southworth [4] have briefly reviewed the 3 previously reported, and Rambar and Denenholz [8] described a fourth in which no congenital cardiac or pulmonary anomalies were noted.

The patient gave a history of rheumatic fever in early childhood and to this cause is attributed our finding of aortic valvular disease, of which he had all classic symptoms. The aortic incompetence was no doubt responsible for the loud diastolic murmur heard at the base of the heart, but it has been pointed out that this can occur in cases of dissecting aneurysm without actual impairment of the semilunar valves.[8]

The roentgenographic features of dissecting aneurysms are usually not pathognomonic. The close approach of the aortic and right auricular tangents in this case suggest extension of dissection along the ascending aorta, which is definitely widened at this point. Although the patient had all the signs of aortic regurgitation, the heart was not definitely of aortic configuration.

A frequent finding in dissecting aneurysms was noted in this case in that the youth gave a history of onset of his heart trouble seven months prior to death by pain in the precordium and chest radiating to the neck. This was followed by one to two hours of unconsciousness from which he recovered without a definite cause other than valvular heart disease being discovered. It is possible that this episode marked the onset of the tear and subsequent dissection of the aneurysm causing death.

8. Rambar, A. C., and Denenholz, E. J.: Arachnodactyly: Report of a Case with Autopsy, Including Histologic Examination of Eye, J. Pediat. **15**: 844-852 (Dec.) 1939.

EMPHYSEMA OF THE ORBIT

A STUDY OF SEVEN CASES

CAPTAIN WILLIAM O. LINHART
MEDICAL CORPS, ARMY OF THE UNITED STATES

According to Brav,[1] orbitopalpebral emphysema is not a very common condition, but when found it is always of traumatic origin and secondary to a fracture of the nasal orbital wall. Contusion over the orbital area with resultant driving of the eyeball into the orbit and recession of the orbital fat to one side may alone result in fracture by direct contact of eyeball and orbital wall. The common points for this type of fracture are in the lacrimal and ethmoidal bones. The lamina papyracea of the ethmoid bone, a smooth, very thin quadrilateral plate which encloses the ethmoidal cells and forms a large part of the medial wall of the orbit, is the most logical point of fracture.

After fracture, on blowing the nose or sneezing, nasal pressure is built up so that air is forced into the orbital cavity or even into the lids if the pressure is great enough to penetrate the tarso-orbital fascia. Fuchs [2] states that the mere presence of a communication between the orbital tissue and a pneumatic

From the Station Hospital, Fort Eustis, Virginia.
In these cases, Edward M. Glasoburn, Captain, M. C., otolaryngologist, did the intranasal examinations; Joe M. Blumberg, Major, M. C., photographed the x-ray films presented; Thomas A. Campbell, Captain, M. C., and Tilman H. Foust, First Lieutenant, M. C., radiologists, interpreted the x-ray films.

1. Brav, Aaron: Orbitopalpebral Emphysema Caused by Perforation of a Dental Canal, J. A. M. A. **65**: 1275 (Oct. 9) 1915.
2. Fuchs, H. Ernst: Textbook of Ophthalmology, ed. 8 (translation by Duane), Philadelphia, J. B. Lippincott Company, p. 834.

cavity is not sufficient to produce the emphysema but that occasionally blowing of the nose alone will produce it.

Diagnosis of orbitopalpebral emphysema is relatively easy, since there is usually a history of trauma along with the characteristic crackling feeling of air under the skin. If the lids are grossly involved there is considerable swelling with little or no inflammatory signs and with very little tenderness on palpation. Proptosis is present only if the lids are relatively free of air.

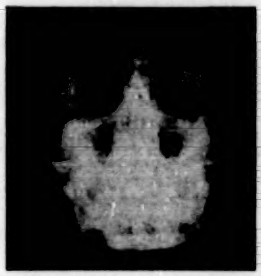


Fig. 1 (case 1).—Mottled appearance, left orbital region, significant of emphysema.

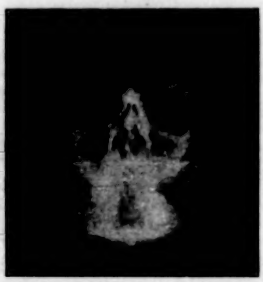


Fig. 2 (case 3).—Opaque left maxillary sinus, emphysema of left lower lid.

Meek [3] has seen very little ocular damage when the lamina papyracea has been fractured and is inclined to believe that the relief of ocular pressure by fracture tends to prevent damage to the eyeball itself.

In this series, all soldiers varying in age from 22 to 41 years, there was a definite history of recent trauma in every case. Four were secondary to a blow over the eye while boxing (patients 2, 4, 5 and 7). Patients 1, 3 and 6 were struck with a shoe, flashlight and mushball respectively. The chief complaint of each on first examination was for "puffiness of the eye." On examination, patients 4 and 6 were the only ones who showed proptosis. Patient 3 had considerable ecchymoses of the left eyelids and tenderness over the superior and lateral orbital margins. This patient also was the only one who showed some degree of ocular contusion.

Five of the 7 patients had stereoscopic x-ray films of the orbit. All 5 showed x-ray evidence of emphysema. Two of these, patients 1 (fig. 1) and 2 showed no evidence of fracture except for the emphysema. There was x-ray evidence of chronic pansinusitis in case 2. Patient 3 had a very fine fracture line in the left malar bone anterior and lateral to the left maxillary sinus. In addition the left maxillary sinus was opaque, indicating the probable presence of blood (fig. 2). Patient 5 showed rather pronounced evidence of emphysema in the upper lid and cloudiness of the left antrum. Whether the latter was due to recent injury or old sinusitis could not be determined by x-ray examination. It is interesting to note that 3 of the 5 patients given x-ray examinations had a cloudy antrum on the same side as the emphysema.

No definite roentgenologic evidence of fracture line in the ethmoid, frontal, maxillary or lacrimal bones could be seen in any case. Due emphasis must be placed on the great difficulty in making a definite x-ray diagnosis of any fracture of the medial orbital wall, particularly of the lamina papyracea. Pancoast, Pendergrass and Shaeffer [4] state that fractures of the ethmoid bone are very difficult to diagnose roentgenologically, as they usually present only secondary evidence of fracture, such as interstitial emphysema or clouding of the ethmoidal cells.

Intranasal examination in each case of the cases in the series failed to disclose evidence of bleeding or fracture.

In every case the pupils dilated well with 1 drop of 1 per cent atropine except in case 3, in which 4 drops was required for full dilatation. Fundus examination was negative in every case.

The ciliary injection in case 3 and diplopia in case 4 were absent at the end of the fifth day.

The procedure followed in handling cases was as follows: gross examination, a stereoscopic x-ray film of the orbit, instillation of atropine until the pupil was well dilated, fundus examination, pressure bandage if necessary and admittance to the hospital. Each patient was cautioned not to blow his nose. The air was absorbed and no patient complained of ocular symptoms after the tenth day.

Clinical Summary of Cases Presented

Case	History of Recent Trauma	X-ray Evidence of Fracture	Evidence of Ocular Contusion	Other Contusion Evidence	Gross Proptosis	Emphysema of Lids	Time Interval for Absorption	Complications
1	Yes	Emphysema of lid	None	None	None	Lower	5 days	None
2	Yes	Emphysema of lids	None	Slight ecchymosis of lids	None	Upper and lower	5 days	None
3	Yes	Emphysema of lid, cloudy antrum, crack fracture of malar bone	Slight ciliary injection and slight irregularity of pupils	Pronounced ecchymosis of lids	None	Lower	7 days	None
4	Yes	Emphysema of lids, cloudy antrum	None	Diplopia on looking up and to right	Yes	Small amount, upper and lower	6 days	None
5	Yes	Emphysema of lid, cloudy antrum	None	None	None	Upper	6 days	None
6	Yes	No x-ray	None	None	Yes	Small amount, upper and lower	5 days	None
7	Yes	No x-ray	None	None	None	Upper and lower	7 days	None

SUMMARY

Seven cases of orbitopalpebral emphysema were studied, all with a history of recent trauma. In 5 of the cases stereoscopic x-ray films of the orbit were taken.

No definite fracture lines could be demonstrated to communicate with the nasal cavity. There were no complications in any case.

3. Meek, Raymond E., Commander, U.S.N.R., personal communication to the author.

4. Pancoast, Henry K.; Pendergrass, Eugene P., and Shaeffer, J. Parsons: The Head and Neck in Roentgen Diagnosis, Springfield, Illinois & Baltimore, Charles C Thomas, 1940.

THE PHLEBOMANOMETER: A NEW APPARATUS FOR DIRECT MEASUREMENT OF VENOUS PRESSURE IN LARGE AND SMALL VEINS

G. E. BURCH, M.D., AND TRAVIS WINSOR, M.D.
NEW ORLEANS

The importance, clinically as well as experimentally, of quantitative venous pressure determinations is well known. With full realization of the value of venous pressure measurements, they are neglected because the apparatuses are difficult to use, are too bulky to carry as part of the physician's instruments of examination, are applicable only in fairly large veins and are difficult to clean and sterilize for subsequent use.

About four years ago, Burch and Sodeman [1] described a simple direct method for measuring venous pressure. The method has proved of value clinically and has been used more and more by others. But it, like other direct methods which employ a column of a fluid as the manometer, has the disadvantage of being difficult to carry, prone to spillage of the fluid in the manometer either during use or when being transported from place to place, hard to use and bulky. In order to overcome these disadvantages and to make the apparatus compact, easily portable and of a size to fit in the physician's medical bag, a new instrument, which we have named the phlebomanometer, was constructed. The desirable features of the previously described apparatus [1] were incorporated in the new one.

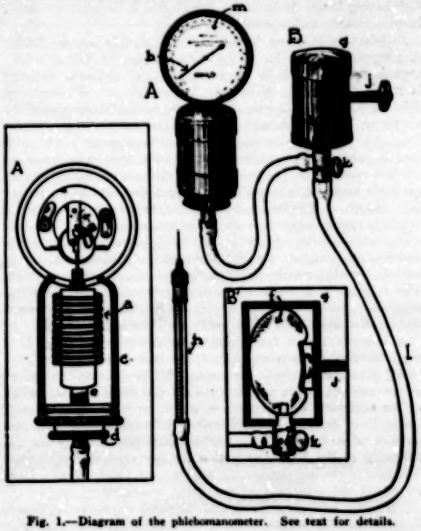


Fig. 1.—Diagram of the phlebomanometer. See text for details.

APPARATUS METHOD

The apparatus is illustrated in figures 1, 2 and 3.

The construction of the apparatus is diagrammatically represented in figure 1. It consists essentially in adapting the principles of the ordinary aneroid manometer used clinically for recording arterial blood pressure to a manometer sensitive enough to record venous pressure. The metal bellows in the former is replaced by a more sensitive brass bellows (*a*). The brass bellows is of such a sensitivity that a pressure of 680 mm. of water rotates the needle (*b*) almost completely around the dial. The dial is drawn and numbered to conform to the sensitivity of the brass bellows. The bellows is enclosed in a housing (*c*) constructed so that the bellows activates the needle when the former is expanded by increasing the pressure within. A lock-nut (*d*) is used to lock the bellows support (*e*) in place once the bellows is adjusted, so that the needle returns to the zero mark on the dial when the pressure within the system is atmospheric. The relationship of the bellows to the gears, levers and jewel bearings which rotate the needle is shown in the inset (*A'*), which is an enlargement of the interior of *A*.

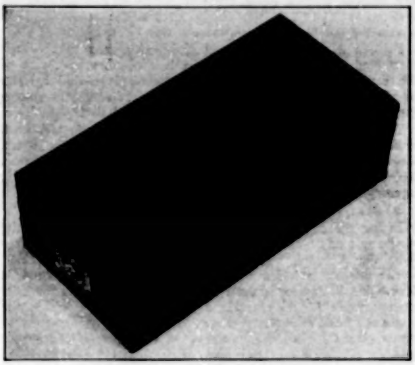


Fig. 2.—The apparatus enclosed in a compact case, approximately one third actual size.

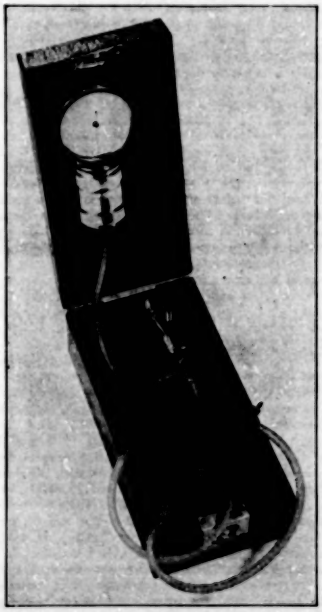


Fig. 3.—The phlebomanometer ready for use.

Mr. G. Morgavi Jr. constructed the apparatus.

From the Department of Medicine, School of Medicine, Tulane University and Charity Hospital of Louisiana.

1. Burch, G. E., and Sodeman, W. A.: A Direct Method for the Determination of Venous Pressure: Relationship of Tissue Pressure to Venous Pressure, J. Clin. Investigation **18**: 31 (Jan.) 1939.

The bellows is connected with rubber tubing to a small rubber pressure bulb (*B*) enclosed in a metal housing (*g*) and to an adapter (*h*) to which is fitted a 25 gage hypodermic needle. The pressure within the system is varied by a screw clamp (*j*). Valve *k*, such as is found on the pressure bulb of any clinical arterial blood pressure recorder, is placed in the system, so that it is possible to return the pressure easily within the system to atmospheric, at any desired moment.

Figures 2 and 3 are reproductions of photographs of the assembled apparatus mounted in a box of about the size of the container used for the ordinary clinical aneroid arterial blood pressure recorder. The apparatus shown in the photographs is approximately one third the natural size.

The glass adapter and needle are dry and sterile and kept, until used, in a narrow bore test tube. The adapter is 10 cm. long and has an outside diameter of 5 mm. and a bore of 1 mm. The surface of the adapter is cross hatched at about 1 mm. intervals.

USE OF THE APPARATUS

In use the sterile adapter and needle are removed from the sterile test tube and connected to the rubber tubing (*l*) leading from the recording portion of the apparatus. A 2 per cent sterile aqueous solution of sodium citrate, which is stored in 1 cc. glass ampules, is drawn into the glass adapter by first closing valve *k* and creating a negative pressure within the system. This negative pressure is produced by unscrewing screw clamp *j* until the meniscus of a column of the citrate solution reaches about the middle of the adapter. The pressure within the system is returned to zero by means of the screw clamp. The needle is then inserted into the vein studied. The pressure of the blood within the vein slowly forces the meniscus of the citrate solution farther into the glass adapter. The pressure within the phlebomanometer is increased by compressing the pressure bulb (*f*) with the screw clamp until the meniscus ceases to move. This occurs when the pressure within the recorder is equal to the blood pressure in the vein. That pressure, the venous pressure, is then read off the dial (*m*).

COMMENT

Since the pressure is determined when the meniscus is not moving, the bore of the needle may be as small as 8 microns.[2] A small needle makes it possible to make measurements in very small veins. The veins should be at heart level or at a constant level for before and after studies if the studies are used for comparison. The capillary pressure in the adapter is 2 cm. This can be corrected by holding the adapter when inserting the needle into the vein so that the meniscus is about 2 cm. above the surface of the vein.

The use of the apparatus is very simple. It is not necessary to have the recording apparatus at heart level. It may be placed on the patient's bed or on an adjoining table. It is necessary only that the vein, at the point of entrance of the needle, be at heart level or a constant level.

Only the glass adapter and needle are sterilized. The sterile 2 per cent aqueous sodium citrate solution is put up in 1 cc. glass ampules to make it easier to handle and carry. Many successive venous pressure measurements may be made with 1 cc. of citrate solution.

The entire apparatus is compact, being no larger than an ordinary clinical aneroid, arterial blood pressure manometer. It will fit easily in a physician's medical bag. The phlebomanometer obviates problems of spillage of fluids, injection of fluids into the veins, loss of blood, problems of sterilization, preparation of the apparatus for further use, and the like.

The fact that the phlebomanometer makes it possible to measure the pressure in small veins adds greatly to the advantage of the apparatus. Frequently it is desirable to know the pressure in structures such as the hands, feet, abdomen and face, where only small veins are found. This is encountered frequently in problems of diagnosis.

The phlebomanometer may be used to measure tissue pressure, spinal fluid pressure, intrapleural pressure or wherever a water manometer is needed. This obviates the purchase of more than one type of water manometer for these various clinical purposes.

2. Landis, E. M.: Microinjection Studies of Capillary Blood Pressure in Human Skin, Heart 15:209 (May) 1930.

Council on Physical Therapy

The Council on Physical Therapy has authorized publication of the following report. Howard A. Carter, Secretary.

ULTRAVIOLET LAMPS FOR DISINFECTING PURPOSES

Introductory Statement

Clinical evidence submitted to the Council on Physical Therapy shows that under properly controlled conditions the killing of air borne micro-organisms by ultraviolet rays may be used to supplement other methods of disinfecting air for prevention of cross infection in contagious wards, in nurseries and for reducing air borne infection of wounds in hospital operating rooms. Council acceptance is limited to ultraviolet disinfecting lamps designed for installation in hospital nurseries, hospital wards and operating rooms.

Satisfactory evidence is not available to warrant acceptance of ultraviolet lamps for disinfecting solids. To kill a micro-organism a direct hit by ultraviolet rays of sufficient intensity is required. This is difficult to accomplish on the edge of a drinking cup, for example, also in a liquid containing suspended matter or in air laden with dust particles that shield the organism. Ultraviolet radiation cannot penetrate deeply and hence may be absorbed by finger marks, saliva, cosmetics or other foreign matter on a drinking cup. In view of the present available evidence, ultraviolet radiation appears to be an uncertain means of sterilizing solid objects (drinking cups, combs, brushes, shaving utensils, toilet seats and shoes) even if irradiation of the whole surface is possible. Ultraviolet lamps for disinfecting purposes are not accepted for disinfecting air in schools, waiting rooms, public gathering places and large halls. The evidence now available does not indicate that the incidence of colds can be reduced by the installation of uitraviolet lamps and by the irradiation of an enclosure occupied by people.

It is noted that a lamp used for disinfecting purposes is a single unit in an installation, and that compliance of the ultraviolet output of a single lamp unit with the Council's requirements does not insure adequate radiant disinfection or the safety of the occupants of the room in which an installation of such lamps is in actual use. Obviously the manufacturer and distributor of such lamps must assume some responsibility for the adequacy of the lamp installation for purposes of radiant disinfection of the air and for the adequacy of the protection from injury of the occupants of the space irradiated.

The total amount of direct and scattered ultraviolet radiation incident on the occupants must be kept below the level that will produce conjunctivitis, erythema and any other (at present unforeseen) injurious physiologic effects that may arise from prolonged irradiation. This requirement may be met by suitable arrangements of the lamp fixtures and baffles and not by requiring the applicants to wear glasses and special covering of exposed parts of the body (face, hands) normally uncovered. Hence, if the irradiation is of penetrating intensity, in a corridor of the hospital for example, care should be taken that the attendants do not receive an exposure which will cause injury to the skin or eyes, and particular attention should be taken to make sure that the intensity of the space at eye level through which a transient may pass or tarry momentarily will not cause injury to the eyes. Under no circumstances should the occupants of a room be able to look directly at the burner when standing within the region of potent intensity.

Ultraviolet lamps for disinfecting purposes shall have under suitable ventilating conditions of a room a concentration of ozone not to exceed one part in ten million.

Where there are aisle-ways and spaces between beds and wherever transient personnel carry on their work the ultraviolet radiation intensity shall not exceed 0.5 microwatt per square centimeter for a continuous exposure of eight hours and shall not exceed 0.1 microwatt per square centimeter for continuous exposure of twenty-four hours per day.

The General Electric Germicidal Lamps manufactured by the General Electric Company Lamp Department, Nela Park, Cleveland, have been mounted in fixtures manufactured by various firms. The burner or source of ultraviolet radiation and the different fixtures have been examined by the Council.

The characteristics of the General Electric Germicidal Lamps are given as follows:

	G. E. Germicidal 30 watt	G. E. Germicidal 15 watt
Glass types	974 glass	974 glass
Lamp watts + arc ballast	30 + 10	15 + 5
Length in sockets	36 in.	18. in.
Milliwatts, 2,537 A	9,000—10,500	3,600—4,200
Max. Int. Microwatts/cm², 1 m.	100—117	40—46
Max. Int. Microwatts/cm², 1 ft.	740—840	300—340
Lamp life, hours, three hour operating intervals	2,500	2,500
Lamp life, hours, continuous operation	4,000	4,000

The ultraviolet radiation is confined almost entirely to the wavelength 2,537 angstroms. Fixtures should be designed and installed so as to insure little or no direct irradiation of the individuals in the rooms.

When first installed the radiant ultraviolet energy is considerably more intense than 20 microwatts per square centimeter at 1 meter, recognized by the Council as being the minimum intensity for acceptance. As the lamps age the intensity drops off rapidly at first and slower later on. Under ordinary usage the lamps maintain the acceptable minimum intensity or above for the guaranteed period of four thousand hours of continuous operation. If, however, the lamps fall below this intensity before the guaranteed period has elapsed, the firm will make an adjustment on pro rata basis. Users of the equipment are advised to test the lamps each month to determine whether they are up to standard. Since the lamps burn at a characteristic color constantly there is no way of determining whether they are emitting sufficient ultraviolet radiation except by testing them with an ultraviolet meter.

The fixture manufacturers listed here have presented their products, equipped with General Electric Germicidal Lamps, for consideration by the Council:

AMERICANAIRE ULTRAVIOLET GERMICIDAL UNIT

(Models UV-30, UV-15; Hospital Operating Room, Ward and Nursery Models)

ACCEPTABLE

Manufacturer: American Sterilizer Company, Erie, Pa.

The Americanaire Ultraviolet Germidical Unit is designed to irradiate the upper air of a room with ultraviolet radiation for disinfecting purposes. The unit is designed to be mounted on the wall above head level; an adjustable baffle protects occupants from direct irradiation.

A complete Americanaire assembly consists of a reflector housing, a General Electric Germicidal lamp, a baffle, and conductor cord and plug. Model UV-30 is 36 inches in length, 6 inches in width and 9 inches high; the input of the burner used in this model is 30 watts. Model UV-15 is 18 inches in length, 6 inches wide and 9 inches high; input of the burner is 15 watts.

BURTON ULTRAVIOLET AIRADIATOR GERMICIDAL UNIT

(Hospital Operating Room, Nursery and Ward Models)

ACCEPTABLE

Manufacturer: Burton Manufacturing Company, 3855 North Lincoln Avenue, Chicago.

The Burton Ultraviolet Airadiator Germicidal Unit is designed for the reduction of air borne bacteria and cross infection. The unit is equipped for wall mounting and includes a cord and plug set. The reflector is adjustable; the fixture is equipped with 30 watt General Electric Germicidal Lamp.

RADIAIRE

(Operating Room, Ward and Nursery Models)

ACCEPTABLE

Manufacturer: Tru-Ad Company, 1019-1023 North Madison Avenue, Los Angeles.

The Radiaire, Model 991-15, produces ultraviolet radiation for disinfecting purposes. This model is designed for irradiation of operating rooms and hospital wards. The fixture is provided with removable baffles. Correct installation of the unit is said to insure little or no direct irradiation of individuals in the room being irradiated.

This unit was designed for, and is used with, both the 15 watt and 30 watt General Electric Germicidal Lamp.

U-V-RAY AIR STERILIZERS

(Hospital Operating Room, Ward and Nursery Models)

ACCEPTABLE

Manufacturer: Taft-Stern Company, Inc., 221 North LaSalle Street, Chicago.

The U-V-Ray Air Sterilizers are designed for use in hospital operating rooms, wards and nurseries for the reduction of air borne bacteria. The burner housing is so mounted that only the air above head level is irradiated. Electrical equipment for the units includes toggle switch, auxiliary, replaceable starter and wire.

The U-V-Ray units were designed for and are used only with the General Electric Germicidal Lamp.

The Council on Physical Therapy voted to accept the foregoing ultraviolet lamps for disinfecting purposes and equipped with General Electric Germicidal Lamps.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D., Secretary.

LIVER INJECTION (See New and Nonofficial Remedies, 1943, p. 392).

The following dosage forms have been accepted:

THE UPJOHN COMPANY, KALAMAZOO, MICH.

Liver Extract for Parenteral Use, 5 U. S. P. Units per Cc.: 2 cc. ampul and 10 cc. rubber capped vial. A sterile aqueous solution of liver preserved with 0.5 per cent phenol.

Liver Extract for Parenteral Use, 10 U. S. P. Units per Cc.: 1 cc. and 1.5 cc. ampuls and 10 cc. rubber capped vial. A sterile aqueous solution of liver preserved with 0.5 per cent phenol.

BUFFINGTON'S, INC., WORCESTER, MASS.

Purified Solution Liver, 10 U. S. P. (Injectable) Units per Cc.: 10 cc. vial. A sterile aqueous purified solution of liver preserved with 0.5 per cent phenol.

FLINT, EATON & CO., DECATUR, ILL.

Liver Injection (Crude) 1 and 2 U. S. P. Units per Cc.: 15 cc. and 30 cc. multiple dose vial. A sterile aqueous, purified solution of liver preserved with 0.5 per cent phenol.

ALUMINUM HYDROXIDE GEL (See New and Nonofficial Remedies, 1943, p. 365).

The following additional dosage form has been accepted:

ALBA PHARMACEUTICAL DIVISION, WINTHROP CHEMICAL COMPANY, INC., NEW YORK, SUCCESSOR

Creamalin (Unflavored): Contains 5.5 per cent aluminum hydroxide (equivalent to 3.6 per cent aluminum oxide). Marketed in bottles of 6 fluidounces and 1 pint.

DIETHYLSTILBESTROL (See New and Nonofficial Remedies, 1943, p. 403).

The following dosage forms have been accepted:

GEORGE A. BREON & COMPANY, INC., KANSAS CITY, MO.

Caplets Diethylstilbestrol: 0.2, 0.5 and 1 mg.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 North Dearborn Street - - Chicago 10, Ill.

Cable Address - - - - "Medic, Chicago"

Subscription price - - - - - Eight dollars per annum in advance

Please send in promptly notice of change of address, giving both old and new; always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.

SATURDAY, SEPTEMBER 11, 1943

CLOSTRIDIUM WELCHI INFECTION OF THE UTERUS

Gas gangrene of the uterus is a rare disease. Toombs and Michelson [1] in 1928 were able to assemble records of only 45 cases. Falls [2] in 1933 reported 6 cases, and Lash [3] in the same year reported 3. Marchetti [4] in 1934 found 56 cases reported in the literature, to which he added 1 of his own. The largest individual series is probably that of Russell and Roach,[5] who in 1937 reported 17 cases of their own. Clinically the postabortal and the puerperal groups may be differentiated. How does the infection occur? Is Clostridium welchi a normal inhabitant of the vaginal tract? Bysshe [6] obtained 4.5 per cent of positive Clostridium welchi vaginal cultures from 547 routine examinations of pregnant and puerperal women. Of the patients with positive cultures, 20 per cent showed some puerperal morbidity and clinical evidence of at least endometritis. Falls found gas bacilli present in the vaginal tract of 8.61 per cent of all cases in three hospitals. The incidence of positive cultures among his gynecologic cases amounted to 33 per cent and of incomplete abortions to 29.41 per cent. Douglas and Rhees [7] obtained 3.5 per cent of positive Clostridium welchi cultures following operative deliveries.

The presence of Clostridium welchi organisms in the vagina does not apparently determine a clinical infection. A necessary factor for the development of a severe infection is intervention sufficient to introduce the Clostridium welchi bacilli into the uterus. Wrigley [8] believes that a severe maternal infection results not only from intrauterine manipulations which introduce the infection into the uterus but also from damage to the maternal tissues with the child dead at the time of manipulation. This opinion was supported by Lash but was denied by Toombs and by Hill on the basis of their reports of fatal puerperal infection in which the mother was delivered of a living child. Without mechanical intervention of some kind, Clostridium welchi infections are rare. Strains resembling those which cause fulminating infection have been present in the vagina but not in the uterus without resultant infection. This is in keeping with the supposition that Clostridium welchi does not usually gain access to the uterine contents except through intervention.

Recent bacteriologic studies by Hildred Butler [9] showed that the strains of Clostridium welchi are subject to great variation. She studied more than 600 strains of this organism with regard to growth characteristics, capsulation in broth cultures, production of alpha toxin, phagocytosis by human leukocytes and pathogenicity of washed cultures for guinea pigs. The severe generalized infections were caused by two distinct and recognizable variants, and the nature of the patients' symptoms was correlated with the characteristics of the strain. The severe clinical cases could be divided into two groups: (1) those characterized by jaundice, which was usually accompanied by hemoglobinemia and hemoglobinuria, and (2) those characterized by collapse without jaundice. For a control group Butler used strains of Clostridium welchi from abortional cases without symptoms of severe infection or without symptoms of infection due to this organism. She found that all the strains causing severe general infection were heavily capsulated, resistant to phagocytosis and productive of fatal infection in guinea pigs when washed cultures were used. The observation that a certain proportion of Clostridium welchi strains are capable of initiating a fatal infection in the guinea pig when the inoculum consists of organisms washed free of toxin, that some strains are resistant to phagocytosis by human leukocytes and that this resistance is practically unaffected by the presence of antitoxin but is completely removed by the addition of antibacteriologic serum appropriate to the strain concerned suggests that some strains are highly invasive in addition to producing a potent exotoxin. The importance of the invasiveness of the infecting strain has not been sufficiently investigated, probably because of preoccupation with the toxemic aspect of these infections.

1. Toombs, P. W., and Michelson, I. D.: Clostridium Welchi Septicemia Complicating Prolonged Labor Due to Obstructing Myoma of Uterus, Am. J. Obst. & Gynec. **15**: 379 (March) 1928.
2. Falls, F. H.: Endometritis and Physometra Due to Welch Bacillus, Am. J. Obst. & Gynec. **25**: 280 (Feb.) 1933.
3. Lash, A. F.: Puerperal Sepsis: B. Welchi, Fatal Types, Am. J. Obst. & Gynec. **25**: 288 (Feb.) 1933.
4. Marchetti, A. A.: Intrapartum Gas Bacillus Infection, Am. J. Obst. & Gynec. **27**: 613 (April) 1934.
5. Russell, P. B., Jr., and Roach, M. J.: B. Welchi Infections in Pregnancy, with a Review of the Literature and a Report of 17 Cases, Am. J. Obst. & Gynec. **38**: 437 (Sept.) 1939.
6. Bysshe, S. M.: The Significance of Clostridium Welchi in the Genital Tract of Pregnant and Puerperal Women, Am. J. Obst. & Gynec. **25**: 995 (June) 1938.
7. Douglas, R. G., and Rhees, Henrietta S.: Bacteriologic Findings in the Uterus During Labor and the Early Puerperium, Am. J. Obst. & Gynec. **27**: 203 (Feb.) 1934.
8. Wrigley, A. J.: Puerperal Infection by Pathogenic Anaerobic Bacteria, Proc. Roy. Soc. Med. **23**: 1645, 1930.
9. Butler, Hildred M.: Further Bacteriological Studies of Severe Clostridium Welchi Infections Following Abortion, J. Obst. & Gynaec. Brit. Emp. **50**: 105 (April) 1943.

Sadusk and Manahan [10] report 2 cases of postabortive infection with Clostridium welchi with positive blood cultures in which the blood stream was rapidly sterilized by the use of sulfanilamide and the patients recovered. They have also demonstrated the bacteriostatic action of sulfanilamide on Clostridium welchi in vitro. Coralie Rendle-Short [11] reports 6 cases. Four of the patients were treated with anti-gas gangrene and sulfapyridine and all 4 recovered. The other 2 were not so treated and died. Evaluation of the effectiveness of the sulfonamides in Clostridium welchi infection of the uterus will not be possible until more clinical observations, checked by complete bacteriologic studies, become available.

CHRONIC GASTRITIS AND CANCER OF THE STOMACH

Konjetzny in 1913, working with freshly fixed, resected material, suggested that carcinoma of the stomach develops on an inflammatory basis. He formulated his concept of "gastritis hyperplastica atrophicans" and concluded that the greater portion of gastric carcinomas (about 85 per cent) arose on the basis of chronic gastritis and that the latter constitutes a precancerous condition. Investigations of Orator, including a study of 700 cases of ulcer and 150 of cancer, seemed to establish a close association between the presence of chronic gastritis and its allied intestinal metaplasia and that of gastric carcinoma. He concluded that about 80 per cent of gastric carcinomas arose on a basis of precancerous gastritis and that the remainder arose through cancerous transformation of gastric ulcers, so-called ulcerocancers. This opinion was supported by some workers in this field and was opposed by others. Some suggested that the gastritis was a result, rather than a cause, of the cancer.

Guiss and Stewart,[1] working in the pathologic laboratories of the Memorial Hospital for the Treatment of Cancer and Allied Diseases, made a careful anatomic study of the relationship of chronic atrophic gastritis and gastric cancer. For their study they used stomachs which were obtained immediately, or within two or three hours at most, after death. Surgically resected material was obtained within five to ten minutes of its removal. Five distinct groups of material suitable for study were collected. Group A consisted of 35 stomachs obtained from premature infants born at from six months' gestation to term and from a few infants who were stillborn at term or who died within a few days of birth. Group B was made up of 73 "normal" stomachs obtained from persons who had no history or other indication of gastric disease. With few exceptions, these were all from persons who died as a result of trauma or from acute infectious diseases of short duration. This group was augmented by an additional 22 specimens from young subjects who died of electric shock. Group C included 77 "normal" stomachs obtained from patients who died of nongastric cancers. None of these patients gave any history of gastric symptoms and, as far as could be ascertained, differed from group B only in that they died of cancer after prolonged illnesses. Group D was composed of 73 gastric carcinomas, the majority being surgically resected specimens. Group E was a miscellaneous group of unselected consecutive stomach specimens resected for gastric lesions other than carcinoma, such as gastric ulcer, myoma and sarcoma.

The microscopic studies showed that intestinal metaplasia, heterotopia of the pyloric glands, mucosal cysts, heavy leukocytic infiltration and large numbers of lymphoid aggregates were not found in truly normal stomachs but were evidences of gastritic changes. Stomachs of patients who died of cancer other than gastric cancer were essentially identical with those of persons who died from other causes, except that they contained fewer lymphoid follicles and collections, and less leukocytic infiltrate. This difference was directly proportional to the degree of malnutrition present and was not due to the presence of cancer itself in the patient. Eighty-two per cent of stomachs from apparently normal persons who died within the gastric cancer age (over 40) showed microscopic evidence of chronic atrophic gastritis. Sixty-six per cent of stomachs from persons over 40 who died of extragastric cancer showed microscopic evidence of chronic atrophic gastritis. Ninety-seven per cent of stomachs with gastric carcinoma showed associated chronic atrophic gastritis. There was a similar incidence of chronic atrophic gastritis in association with gastric diseases other than carcinoma.

The chronic atrophic gastritis associated with gastric carcinoma appears, therefore, to be a nonspecific "reaction" to inflammation and gastric injury in general. The authors did not see any evidence to suggest an etiologic relationship except that chronic atrophic gastritis may be caused or intensified by the presence of carcinoma in the stomach. The factors included in the present concept of chronic atrophic gastritis, such as mucosal atrophy, increased amounts of leukocytic infiltrate and lymphoid aggregates, intestinal metaplasia and pyloric gland heterotopia are all rather closely correlated, variation in one factor tending to be associated with proportionate changes in the others. This correlation probably justifies the consideration of these changes as a pathologic entity.

Guiss and Stewart feel that the concept that chronic atrophic gastritis is a precancerous lesion is not borne out by their observations. They point out that the slight difference in incidence of gastric atrophy between

10. Sadusk, J. F., Jr., and Manahan, C. P.: Sulfanilamide for Puerperal Infections Due to Clostridium Welchi, J. A. M. A. 112:14 (July 1) 1939.

11. Rendle-Short, Coralie: Clostridium Welchi Infection of the Uterus Complicating Delivery, J. Obst. & Gynaec. Brit. Emp. 49:581 (Dec.) 1942.

1. Guiss, Lewis W., and Stewart, Fred W.: Chronic Atrophic Gastritis and Cancer of the Stomach, Arch. Surg. 46:823 (June) 1943.

cancerous and noncancerous stomachs in their series is far from being convincing. Atrophic gastritis is an exceedingly common condition with advancing age. Mere statistical correlation of incidence of gastric atrophy and of gastric cancer is quite insufficient to show causal relation. Both atrophy and cancer appear to be events in aging organs. Gastric cancer is probably correlated not only with gastric atrophy but with atrophy of other organs, such as the genitalia, breasts, circulatory apparatus or even the skin, thus reducing to absurdity the conclusions based on mere statistics as to incidence.

Current Comment

DEHYDRATED NERVE GRAFTS

To avoid sacrificing a "minor" nerve for repair of a more vital one, numerous zoologists have tried grafts of preserved or fixed nerves, such as petrolatum stored grafts or grafts fixed in alcohol or solution of formaldehyde. None of these have proved satisfactory. Since these failures were presumably due to denaturation of the stored nerves, Weiss and his colleagues[1] of the department of zoology, University of Chicago, have developed a nondenaturing preservative method. Nerves dissected aseptically were dropped into isopentane which was immersed in liquid nitrogen at —195 C., where the nerves froze instantaneously. The frozen nerves were then dehydrated over phosphorus pentoxide in a high vacuum at —40 C. and the resulting dried nerves were stored in sealed aseptic containers. Before using, the stored nerves were rehydrated usually by immersion in isotonic solution of three chlorides in vacuo at room temperature, where they resumed their normal appearance and major histologic characteristics, including specific staining reactions.[2] Thus far segments of these rehydrated "devitalized" nerves about 1 to 2 cm. in length have been grafted into gaps in hindlimb nerves of 38 rats, 4 cats and 18 monkeys. The grafts were usually spliced to the severed nerve stumps by two short arterial sleeves.[3] Twenty-one homoplastic (rat to rat) grafts and eight heteroplastic (cat to rat) grafts have been studied microscopically from six days to eighteen weeks after the operation. Homoplastic devitalized grafts heal and promote regeneration much as do live grafts. Sheath cells and nerve fibers invade the grafts promptly, traveling in straight parallel courses without appreciable branching or confusion. Four months after the operation, regeneration is so perfect that there is no evidence of the old proximal "suture line." The regenerated fibers are of normal caliber with normal impulse conduction, motility and sensitivity being fully restored. In contrast, heteroplastic devitalized grafts are unsuccessful, behaving much like foreign bodies. Weiss concludes from this evidence that frozen-dried homoplastic nerve grafts are of clinical promise and that "banks of assorted nerve sizes stored in the dry condition could readily fill a steady demand."

1. Weiss, Paul, and Taylor, A. C.: Proc. Soc. Exper. Biol. & Med. **53**: 326 (April) 1943.
2. Hoerr, N. L.: Anat. Rec. **66**: 81, 91 (Aug. 25) 1936.
3. Weiss, Paul: Science **93**: 67 (Jan. 17) 1941.

ORAL AND RECTAL TEMPERATURES AFTER EXERCISE

Temperatures taken by rectum are about 1 degree F. higher than those taken by mouth. The body temperature rises several degrees as a result of exercise, the extent of rise being dependent on the amount, intensity and nature of the exertion. Recently Brennemann[1] reported the recording of the rectal and oral temperatures just before and just after various degrees of exercise in 10 children and 3 adults, all apparently in sound health. The rectal temperatures rose from 1 to 4 degrees F. higher after exercise while oral temperatures remained relatively unchanged, rose only slightly or even dropped. The increase in rectal temperatures and hence the variation from the oral was directly proportional to the intensity of the exercise. Normal temperatures both by rectum and by mouth were resumed in from thirty to sixty minutes. The clinical implications are obvious: a high afternoon or postexercise rectal temperature in a child cannot be presumed to reflect a disease process and conversely the danger of such a high temperature masking a disease process should not be overlooked.

ALCOHOL AND IMMUNIZATION

During several cholera epidemics of the nineteenth century higher mortality rates were noted among excessive users of alcohol than among the nonalcoholic. From this Koch[1] concluded that alcoholic intoxication lowers natural resistance to the cholera vibrio; this conclusion was afterward extended to include other pathogenic micro-organisms.[2] Lushbaugh[3] of the department of pathology of the University of Chicago has recently made tests to study the effects of alcohol on acquired specific immunity in laboratory animals. Active immunity against pneumococci was produced in rabbits by repeated subcutaneous, intra-abdominal and intravenous injection of a formaldehyde killed type I vaccine. After six injections of this vaccine the rabbits yielded serums which agglutinated homologous type I pneumococci in dilutions as high as 1:1,280 (average 1:640). An additional group of rabbits was immunized passively by intravenous injection of commercial immune rabbit serum given in amounts sufficient to raise their specific agglutinating titer to 1:80. Inoculation tests showed that both methods of immunization afforded adequate protection against 0.1 cc. of a six to eight hour broth culture of living type I pneumococci given intracutaneously. The same dose caused 100 per cent fatalities in control nonimmunized rabbits. Alcohol was administered orally by means of a stomach tube to 34 actively immunized, 15 passively immunized and 22 nonimmunized rabbits. The usual dose was 50 to 60 cc. of 24 per cent alcohol, an amount sufficient to produce a stuporous condition bordering on coma. This dose usually raised the alcohol content of the blood stream to 400 to 600 mg. per hundred cubic cen-

1. Brennemann, Joseph: Disparity Between Oral and Rectal Temperatures After Exercise, Am. J. Dis. Child. **66**: 16 (July) 1943.
1. Koch, Robert: Ueber die Choleraäkterres, Berlin, G. Reimer, 1884.
2. Pickrell, K. L.: Bull. Johns Hopkins Hosp. **69**: 238 (Oct.) 1938.
3. Lushbaugh, C. C.: J. Immunol. **46**: 151 (March) 1943.

timeters, which concentration was maintained by giving additional doses of alcohol as needed. Two hours after the intoxication was begun each rabbit together with a nonintoxicated control was given the routine test dose of pneumococci. Of 27 nonintoxicated immune controls only 1 rabbit died of pneumococcic septicemia, a 3.7 per cent mortality. Of 49 intoxicated immune rabbits 32 died, a 65 per cent mortality. Both active and passive immunity was therefore almost completely suppressed as a result of two hours of alcoholic intoxication. Differences were noted between the dermal lesions at the site of the test injection in the intoxicated and the nonintoxicated groups. In intoxicated animals the local edema and leukocytic infiltration were reduced, suggesting an almost total suppression of the local inflammatory reaction. Lushbaugh found that the alcoholic lessening of immunity can be partially overcome by a massive (fivefold) therapeutic dose of commercial antiserum. This confirms the current clinical belief that a "double dose" of antiserum is necessary in the alcoholic.

PROBLEMS OF PERSONNEL IN TUBERCULOSIS SANATORIUMS

The incidence of tuberculosis has risen throughout the warring nations. The unprecedented increase in discovery of early tuberculosis by mass roentgenography places new stress on facilities for the care of tuberculous patients in sanatoriums. The recent report,[1] under the auspices of the Trudeau Society, of the personnel problems of tuberculosis sanatoriums resulting from war conditions is hence particularly timely. This report is based on detailed information obtained from two hundred and thirty-four institutions caring for nearly 40,000 patients. Large institutions have had a greater loss of personnel than smaller ones. Sanatoriums in the middle Atlantic and New England states have suffered most and hospitals in the Rocky Mountain states least. The loss of personnel has involved physicians, nurses, pharmacists, dietitians, social service workers, technicians and indeed all categories of personnel. In the face of this situation the council of the American Trudeau Society has adopted a resolution that measures be taken immediately to insure proper financial support for existing sanatoriums, that reduction in the number of available beds be not approved and that the situation be brought to the attention of the War Manpower Commission with the request that measures be taken to insure adequate personnel both in number and in quality so that tuberculosis sanatoriums can effectively carry out their part in the war effort. Hospitalization is the major factor in the control of tuberculosis in the patient as well as in the community. When existing sanatoriums cannot maintain adequate or usual capacity or acceptable standards of service at the same time as case finding surveys are discovering new cases of tuberculosis in large numbers, all the agencies concerned, social and governmental, must cooperate in well organized and resolute efforts to provide needed facilities.

1. Personnel Problems of Sanatoria Resulting from War Conditions, Report of a Study Made by the Committee on Sanatorium Standards, American Trudeau Society, Medical Section of the National Tuberculosis Association, April 1943.

MOTOR VEHICLE ACCIDENT FATALITIES

Over twenty-five thousand deaths were reported as having occurred from motor vehicle accidents in 1941 in thirty-seven states, the District of Columbia and New York City.[1] These figures represent a motor vehicle accident rate of 30.7 per hundred thousand of population; they have recently been analyzed by the Bureau of the Census. The analysis reveals many factors related to the time, place and other features of the accident which should prove valuable to traffic safety engineers and educators. From the medical point of view it is important that 67.5 per cent of the death certificates for victims of fatal motor vehicle accidents specified the motor vehicle as the only cause of death. In these cases the average life after the occurrence of the accident was 1.4 days as contrasted with the duration of 8.4 days for fatalities from accidents which were complicated by other conditions. Such a list of complications includes diseases present before the accident or those which resulted from or were aggravated by the accident itself. The most frequent cause contributing to death was intracranial lesions of vascular origin (cerebral hemorrhage, embolism and thrombosis). Other disease of the circulatory system (hemorrhage outside the brain) was another frequently associated condition. When hemorrhage was the most important contributory cause of death the duration of injury was only 1.5 days. A large proportion of deaths that specified only one cause—motor vehicle accident—also appear to have resulted from hemorrhages; hence the importance of prompt first aid is readily apparent.

FALSE POSITIVE SYPHILITIC REACTIONS

False positive syphilitic reactions have been attributed to numerous causes, with smallpox vaccination recently added to this list. Using the Kolmer, Kline, Hinton and Mazzini technics, Lynch [1] found that pseudosyphilitic serum reactions developed in 16 per cent of his patients within two weeks after vaccination. The serums usually remained positive for at least two months. In order to confirm these data a group of 202 serologically negative medical students and nurses was vaccinated by Favorite [2] of Hahnemann Medical College, followed by periodic serologic tests with the Kolmer, Kahn and Mazzini technics. From fourteen to sixty days after vaccination, 24 (11.8 per cent) of these individuals gave positive pseudosyphilitic reactions with one or more of these technics. Many of the reactions were of 3 or 4 plus intensity. Subsequent retests made at fourteen day intervals showed that the false positive syphilitic reactions gradually decreased in intensity. All serums became negative by the end of four months. The pseudoreactions were about equally divided between the nonimmune and the accelerated (vaccinoid) groups, none occurring after immune vaccination reactions.

1. Annual Summary of Motor Vehicle Accident Fatalities, 1941, Part II: Analytical Summary, Department of Commerce, Bureau of the Census, Washington, D. C., July 31, 1943.

1. Lynch, F. W., Boynton, Ruth E., and Kimball, Anne C.: False Positive Serologic Reactions for Syphilis Due to Smallpox Vaccinations (Vaccinia) J. A. M. A. **117**: 591 (Aug. 21) 1941.

2. Favorite, G. O.: Proc. Soc. Exper. Biol. & Med. **52**: 297 (April) 1943.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession.

PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS, DENTISTS AND VETERINARIANS

PLAN FOR THE ALLOCATION OF INTERNS AND RESIDENTS IN HOSPITALS, 1944

Approved by Directing Board, Procurement and Assignment Service

In view of changing needs, both civilian and military, and of the last year's experience in attempting an allocation of hospital house staffs, a new allocation plan has been developed. It involves three major changes. The first of these is that internships and residencies are being changed over from a twelve to a nine month base period to remedy the difficulties inherent in a nine month medical school year and a twelve month hospital year. The second is that certain essential commissioned men will be permitted to give some service as hospital residents, under conditions outlined here. The third is that interns as well as residents are included in the allocation plan. One of the reasons for this change is that hospitals which have shifted from two year to one year internships have drained by approximately 1,400 the supply of interns which would in earlier years have been available to smaller hospitals.

COMPLIANCE

This year certain hospitals have failed to cooperate with the Procurement and Assignment Service plan because of their reliance on Selective Service deferments for the maintenance of their staffs. Since Selective Service deferment of residents is rapidly becoming a thing of the past, hospitals will find it of great advantage to cooperate with the Surgeon Generals and the Procurement and Assignment Service in this new allocation plan, which is designed to provide an equitable distribution of the house staff members available.

SHIFT FROM TWELVE TO NINE MONTH BASE

There has been general dissatisfaction with the three month overlapping of intern and resident services, which have been wasteful of urgently needed medical manpower.

To remedy this situation the Directing Board of Procurement and Assignment Service proposed on the recommendation of its Hospital Comittee that a nine-nine-nine month plan be adopted. For those men who would be commissioned the proposal was:

The internship should be reduced from twelve to nine months.

One half of the interns should be retained for a second nine months as assistant residents.

One half of that group should be retained for a third nine month period as residents.

AGREEMENT WITH SURGEON GENERALS

This proposal has been accepted by the Surgeon Generals of the Army and Navy in this modified form:

The internship shall be reduced to nine months.

One third of the interns who hold commissions in the Army and Navy may be deferred for nine months (tenth to eighteenth months).

One half of this number or one sixth of the total number of commissioned interns may be deferred for an additional nine months (nineteenth to twenty-seventh months).

Acceptance of the plan by the Surgeon Generals is conditional on agreement by the state boards of medical examiners that eligibility for licensure of those who receive only nine months' internship will not be impaired and with the understanding that internships shall begin within thirty days after the completion of the medical course and that hospitals will limit their appointments of interns and residents to individuals who hold commissions or who have been officially rejected for commissions in the armed forces.

DEFINITION

In the interest of uniformity under this program the Procurement and Assignment Service will classify house officers as follows: interns during the first nine months, assistant residents during the second nine months and residents during the third nine months of hospital service.

The Procurement and Assignment Service believes that minimum adequate hospital medical service can be provided only if each hospital exerts every effort to obtain and retain women and physically disqualified house officers, since the number of men to be deferred by the armed services will not be adequate to meet even the minimal needs for hospital residents, and since the Procurement and Assignment Service cannot assign men to house staff positions.

The overall cut will be about one third. For the average hospital the allocation for 1944 will be somewhat less than two thirds of the 1940 number of residents and two thirds to three fourths of the 1940 number of interns.[1] It will be necessary in general to make proportionate cuts from 1940 in the new house staff quotas with certain adjustments for present teaching loads and pronounced shifts in patient population. The number of house staffs included in the quotas of the individual hospitals will include women physicians and all male physicians whether or not physically disqualified and whether or not commissioned. The allocation of this personnel will be primarily on the basis of the needs for civilian medical care.

CHANGE OVER TO NINE MONTH PLAN

Under this plan two thirds of all commissioned interns now in hospitals will be eligible for orders to active duty on or about Jan. 1, 1944 (nine months after the beginning of their internships) and at about the time the new graduates will be beginning their internships.

In many hospitals there are residents holding commissions who have already been deferred by the Army or Navy until July 1, 1944.

On their departure certain house staffs will be reduced below the quota level for three months. For most hospitals this will come at a time of relatively low census. In cases of extreme difficulty every effort will be made by the Procurement and Assignment Service to assist the hospitals through this three month period.

PROCEDURES

All hospitals have been asked to submit immediately analyses of their present and past situations for the purpose of facilitating this allocation for 1944. Based on this information and on field studies now in progress, the Hospital Committee will complete its estimates of the total number of physicians

1. The 1940 figure for interns includes all physicians reported as interns by the educational number of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION regardless of the length of their appointment.

who will be available for house staff positions in 1944. With this information the committee will set house staff quotas for each hospital and from them build state quotas. In setting tentative quotas by the Procurement and Assignment Service for individual hospitals, consideration will be given to obvious injustices which might occur in a too arbitrary application of the allocation plan.

Each state will be required to remain within its total quota; that is, no requests will be granted for deferments which would bring a state total over the quota established for that state. The state chairman may find it desirable to make certain changes in hospital allotments within the limits of his total state quota. Such changes will be subject to appeal and review at the national level. State chairmen will receive requests for deferments from hospitals and transmit them to the Washington office of the Procurement and Assignment Service, which will review them and make recommendations to the Surgeon Generals.

A commissioned intern may move to a second hospital at the end of his nine or eighteen month service, so a hospital may ask for the service of a commissioned intern or assistant resident from another hospital for a nine month assistant residency or residency. In other words, movements of physicians on house staff shall not be discontinued or discouraged as long as the physician desires the hospital service and the hospital and state remain within their quotas.

NOTE.—*The Council on Medical Education and Hospitals of the American Medical Association has approved the plan described. The shortening of the internship is a regrettable wartime necessity, but certain undesirable features of the existing house staff program should be corrected by the plan.*—ED.

WARTIME NURSING IS DIFFERENT

Statement Issued by Directing Board of War Manpower Commission's Procurement and Assignment Service for Physicians, Dentists, Veterinarians, Sanitary Engineers and Nurses

It is utterly impossible to provide the necessary volume of wartime nursing service on a peacetime basis. Places where nursing is going on as usual must share with others. Individual nurses who have not made adjustments to wartime needs for their service should understand the necessity for their participation.

The National Nursing Council has pointed out that the value of any national plan must be judged by its usefulness at the local level, i. e. where nurses live and work—in the country, in the villages, towns and cities of the nation.

Wartime nursing is different! That inescapable fact must be generally accepted by nurses, by physicians and by hospital administrators. Energy and motion now spent in resistance to change must be released for the attack on war created needs.

Nurses have wrought many changes, but not enough, in the pattern of nursing service since Pearl Harbor. "We just do the best we can" is heard more frequently than "This is our plan." Generally speaking, educational programs have received more thought than the service programs. Acceleration of the basic course in nursing is an outstanding example. State boards of nurse examiners have initiated others.

The principles of good nursing have not changed, but nurses are learning to concentrate on the essentials. In the analysis and administration of nursing service radical changes are being made. Tremendously valuable assistance in caring for patients is being secured from the Red Cross nurse's aides and other volunteers as well as from paid auxiliary workers.

Thus far nursing has not been rationed; such rationing would be complicated by the differences in individual nurses and the degree of essentiality of needed services. The sharing of services is more difficult than the sharing of goods.

A critical shortage of nurses exists. Here are the facts: Over 36,000 nurses are now with the armed forces, and the Red Cross has accepted responsibility for the recruitment of an equal number by June 30, 1944. Our men are receiving skilled medical care of a high order, as shown by the high percentage of recovery from injury. Skilled nursing is an important factor in such care. Then too the very presence of nurses near the bases of military operations has repeatedly been described as a potent force in maintaining morale.

There has been an unprecedented increase in the use of civilian hospitals. Hospitals gave fourteen and a quarter million more days of care in 1942 than in the preceding year, and the trend still is definitely upward. This is in keeping with the rapid growth of the Blue Cross (group hospitalization) plans and the Children's Bureau hospitalization program for the care of the families of service men.

Nursing is essential to the nation's health. The National Nursing Inventories (of nursing resources) of 1941 and 1943 by the U. S. Public Health Service offer a comparison of data for the two years.

The total number of nurses graduated in the two years is well in excess of the number withdrawn for military service; this fact is not apparent in the inventory. The returns are apparently incomplete. Active nurses who did not return their questionnaires apparently did not realize the profound importance of the information requested. This information is the basis for present planning and safeguarding the future.

The relatively small decrease in the number of institutional nurses is much less significant than the increased use of hospitals in creating the serious shortage of nurses.

The large number of inactive nurses who reported themselves available is encouraging, but available for what? Full time? Part time? These nurses and others who are still "hidden" can make a valuable contribution to our nursing resources. Although it requires a little more planning, the service of two part time nurses can equal that of one full time nurse. Wartime nursing puts a tremendous burden on all the administrative nurses.

Here is the program of the new Nursing Division of the Procurement and Assignment Service: The Red Cross recruitment committees are pledged to recruit 36,000 nurses this year. The new division will (1) determine the availability for military service or essentiality for civilian service of all nurses eligible for military service and submit such determinations to the American Red Cross for use in procurement of nurses for the armed forces, (2) promote plans for maximum utilization of full time nurses and those who are able to serve only part time, (3) develop and maintain a roster of all graduate registered nurses and (4) develop and encourage sound methods of supplementing the work of nurses with nonprofessional personnel.

National Nursing Inventories

	1941	1943
Total returns	289,286	259,174
Active		
Institutional	81,708	77,704
Public health	17,746	18,900
Industrial	5,512	11,220
Private duty	44,799	44,299
Other	21,276	18,476
Inactive but available for nursing	25,252	38,746 (of these 23,576 are married and under 40)
Inactive, not available	90,979	49,829
In Nurse Corps of Army and Navy	6,371	over 36,000 (precise data not available)

Through the War Manpower Commission, not only will nursing have the benefit of the experience of medicine in the procurement and assignment of physicians but means will be found to interpret wartime nursing to physicians and their cooperation secured in effecting desirable wartime adjustments.

SUGGESTED READING

1. Priorities for Nurses. National Nursing Council for War Service, 1790 Broadway, New York, May 1943, revised edition.

2. Distribution of Nursing Service During War. National Nursing Council for War Service, 1790 Broadwayy, New York, May 1942.

3. Volunteers in Health, Medical Care and Nursing. U. S. Office of Civilian Defense, Washington, D. C.

PHYSICIANS NEEDED FOR COAST GUARD

A request for physicians who are needed immediately for service with the United States Coast Guard has been made by the War Manpower Commission's Procurement and Assignment Service.

In a communication addressed to the state chairmen for physicians of the Procurement and Assignment Service, the latter's directing board requests that the central office of Procurement and Assignment Service be supplied immediately with the names of a specified number of available physicians "who are not physically disqualified so that representatives of the United States Public Health Service may get in touch with them with a view to inviting them to apply for commissions."

The United States Public Health Service furnishes the physician personnel for the Coast Guard. The request states that state chairmen should continue furnishing each month until further notice a specified number of names of available physicians for possible recruitment by the United States Public Health Service.

MISCELLANEOUS

EXTENSION OF TIME FOR FILING DECLARATION OF ESTIMATED TAX GRANTED ARMED FORCES

Any taxpayer who is a member of the military or naval forces of the United States in active service on September 15 has been granted an extension of time for such period as may be necessary but not beyond March 15, 1944, within which to file the declaration of estimated tax required by the Current Tax Payment Act of 1943 and to pay such estimated tax or any instalment thereof otherwise required to be paid before March 15, 1944.

If under the terms of the extension the time for filing a declaration of estimated tax is extended beyond the close of the taxpayer's taxable year and the taxpayer makes his income tax return and pays the tax for such taxable year on or before March 15, 1944, no declaration of estimated tax need be filed for such year.

As used in the recent regulation authorizing the extension of time for the filing of declarations and paying tax, the term "member of the military or naval forces of the United States" includes any individual in the Army of the United States, the United States Navy, the Marine Corps, the Coast Guard, the Army Nurse Corps, Female, the Women's Army Corps, the Navy Nurse Corps, Female, the Women's Reserve Branch of the Naval Reserve, the Women's Reserve branch of the Coast Guard Reserve and the Women's Reserve branch of the Marine Corps Reserve (Marine Corps Women's Reserve) and any commissioned officer of the Coast and Geodetic Survey or of the Public Health Service.

THE U. S. CADET NURSE CORPS

Surg. Gen. Thomas Parran, U. S. Public Health Service, Miss Lucile Petry and Mrs. Eugenia K. Spalding, director and associate director respectively of the U. S. Cadet Nurse Corps, have completed a nationwide tour in response to a request from the National Nursing Council for War Service and the American Hospital Association to provide first hand information to hospitals and nursing schools about the new Nurse Corps. The tour began at Harrisburg on August 9 and ended at Seattle on September 1. Great interest has been shown in this new program, which will provide nursing education without cost to the student. This is not a federally standardized program, Dr. Parran said; corps members will attend any of the thirteen hundred accredited nursing schools that meet requirements of the law. The quota for the corps is 65,000 new student nurses this year. They will receive monthly allowances of from $15 to at least $30, and during the final period of training maintenance and monthly allowances will be paid by the school of nursing or hospital.

ORDER RESTRICTING USE OF NUTGALLS AND TANNIC ACID REVOKED

The order restricting the use of nutgalls and tannic acid U. S. P. was revoked on August 24 by the War Production Board. Order M-204 controlling the distribution of these products was put into effect on Aug. 8, 1942 chiefly to conserve supplies of tannic acid for use in the treatment of burns.

The National Research Council has advised the War Production Board that medical opinion has been increasing progressively against the use of tannic acid in burn treatment and that the Committee on Surgery of its Division of Medical Sciences recently voted that the use of escharotics be discontinued.

A fairly generous supply of nutgalls is available for the manufacture of tannic acid U. S. P. This supply is supplemented by importations from Peru of tara, from which tannic acid is made. The WPB Chemicals Division considers that there no longer is a critical shortage in this field.

STATEMENT OF PROTEST OF NETHERLANDS PHYSICIANS

The Office of War Information received on August 10 reports from overseas sources concerning the struggle by 6,200 physicians in occupied Holland to avoid compulsory membership in a Nazi controlled medical association. According to the reports, the Dutch physicians in June voluntarily renounced the practice of their profession rather than join the Nazi dominated Chamber of Physicians. The physicians sent a protest statement to Arthur Seyss-Inquart, reich commissioner for the Netherlands, explaining their refusal to join. Several hundred physicians were arrested following receipt of the statement, but most of them were released after several weeks during which medical service in Holland was brought to a virtual standstill. Nazi authorities agreed to permit the doctors to return to practice if they would sign a statement that they had not intended their protest as an "insult" to the occupation authorities or as a "political" gesture. The physicians agreed. Shortly after this truce, however, Seyss-Inquart ordered a fine to be imposed on the doctors of Amsterdam.

The text, slightly edited, of the statement to Seyss-Inquart, in which Dutch physicians explained their refusal to join the Nazi controlled Chamber of Physicians, follows:

"It was with astonishment and indignation that we doctors of the Netherlands learned of your latest instruction concerning the practice of our profession.

"This instruction stipulates among other things that doctors are no longer at liberty to give up their profession or renounce the title connected with it.

"This means that you are again trying to force them to join the Artsenkamer. You threaten with severe penalties those who act contrary to your instructions.

"It has been the practice of Netherlands doctors to work in the interests of our patients and our people. Medical care and sanitary conditions in the Netherlands have always been on a high level, thanks to the quality of our research and practice. The Netherlands Society for the Promotion of Medical Science has maintained high standards as a professional organization. It worked along Dutch rules, built on Dutch traditions, and included almost all Netherlands doctors. We have voluntarily abandoned this excellent organization because we wanted to prevent the enslavement of the Dutch medical body. You then founded the Artsenkamer, which was to impose on us national socialist principles.

"Mr. Reich Commissioner, you must have realized with what aversion we looked on this imported institution imposed on us. The doctors of the Netherlands had and have a great distrust of this organization. In December 1941, on behalf of 4,500

doctors, a letter was addressed to you in which you were urgently requested not to take the steps to apply national socialist measures in the field of medicine. The implementation of racial theories resulting in the deportation of the insane and sick persons and the sterilization of healthy people proves that much of our anxiety was justified. Proof of how much this association runs counter to the spirit and inclination of the Dutch doctors is furnished by the fact that recently 6,200 of them voluntarily ceased practicing in order to escape your medical association.

"Nevertheless, you are trying through coercive measures to impose on us what we do not want and place us under the trusteeship of a small political group which does not have our confidence or respect.

"Mr. Reich Commissioner, the doctors come under your latest decree because at the beginning of their career they took an oath. This oath binds us to certain ethical standards which make it impossible in the future to meet your demands. If it comes to a point where we are confronted with unacceptable demands, it might happen that without regard for your threats we would have to risk our freedom and lives.

"We expect that you will spare us this conflict and will let us work in freedom and peace. The further course of things will depend on you, and you, Mr. Reich Commissioner, are responsible for that to the Dutch nation."

WARTIME GRADUATE MEDICAL MEETINGS

In a preliminary report the Central Committee of the Wartime Graduate Medical Meetings announces that it presented some of the facilities at its disposal at the Georgia State Medical Association meeting which was held on May 13, 1943, at which Drs. James Means, Virgil P. Sydenstricker and William N. Evans appeared at the invitation of the committee.

Also on May 3-5 Drs. Edwin E. Osgood and L. T. Coggeshall participated in a refresher course at the invitation of the Wartime Graduate Medical Meetings offered by the University of Alberta Hospital in Edmonton, Alta.

The Regional Committees to date have responded as follows:

Region 1 (Maine, New Hampshire, Vermont and Massachusetts) and Region 2 (Connecticut and Rhode Island) have consolidated their activities and will work in cooperation with the First Service Command and the Naval District in the New England states. Plans are nearing completion for postgraduate courses at the Newport Naval Hospital for September 14-15-16, including a one day presentation of medical subjects, one day of surgical subjects and one day of subjects in the various fields of medicine. Approximately twenty-five speakers will be presented.

Plans are likewise being formulated for a one, two or three day program to be presented at New London in October.

In Region 3 (New York) courses have already been conducted and others are now being formulated. On July 23 a program covering the "Diagnosis and Treatment of Cardiac Pain" was presented at the St. Albans Naval Hospital, on July 27 a two hour lecture on "Chemotherapy" was presented at the St. Albans Naval Hospital and on August 3 a lecture by Dr. Henry Meleny on "Malaria" at the Brooklyn Naval Hospital. Plans are being made for lectures on shock, burns and plasma and the dysenteries for some time in September.

In Region 10 (Kentucky and Tennessee) the committee has planned an excellent course for the week of October 3 covering burns, shock, blood derivatives and substitutes, chemotherapy, general surgery and the dysenteries.

In Region 18 (Montana and Wyoming) plans are proceeding for courses to be offered in the autumn covering the subjects of anesthesia; shock, burns, blood derivatives; clinical psychiatry, psychosomatic medicine; cardiovascular problems; dysenteries; acute respiratory disease, physical therapy, diagnostic roentgenology.

In Region 19 (Colorado and Utah) plans have been made for programs to be offered on September 30 and October 1 in Denver.

The national consultants are now compiling the names of prominent men throughout the entire country who are willing to serve on a national faculty. This faculty will aid the committees in meeting the demands for teachers.

Requests have recently been received in the central office for speakers to appear on the program being offered by the Dalhousie University for Medical Officers in the Canadian Forces during the week of October 11 and also for the annual meeting of the Saskatchewan Medical Society to be held in Regina, Sask., on September 16, 17 and 18.

PUBLIC HEALTH UNDER HITLER

According to *Donauzeitung*, Belgrade, June 20, on June 17 there were 20 cases of food poisoning in Athens, causing two deaths. Fresh measures are being taken by the police.

LBM announces in *Der Neue Tag*, Prague, of June 6 that all pharmaceutists, with or without diplomas, who are not yet registered with the working community of the medical profession (heilberufe) in Bohemia and Moravia must register by June 15, 1943. This applies in the first place to all those not active in public pharmacies; i. e., those active in wholesale business, industry, offices (behorden), domestic service (haushalt) and so on. Only those pharmaceutists who comply with the order of registration in good time may expect that their qualifications will be considered in case of their mobilization for the war effort. The registrations are to be addressed to the "Working Community of the Medical Profession in Bohemia and Moravia, Working Committee of Apothecaries, Prague II. . . ."

According to *Glas Crnogorca*, Cetinje, March 31, the epidemic of smallpox among the Moslem refugees in the Pljevlje has been spreading. There are now 200 cases at least. Every day there are deaths.

According to Radio Rennes, July 12, an important delegation of French doctors went to Germany in July at the invitation of the general commissioner for foreign workers in Germany to attend special lectures in Berlin and then to be attached to different camps to supervise the health of their compatriots.

The dean of Marseilles University announced that the pharmacy medical students of the 1942 class are requested to carry on their professional activity in Germany for the benefit of the French workers, *Le Mot d'Ordre*, July 7, reports. The students will take care of those wounded in labor accidents and those suffering from illness or wounds resulting from the war. They will principally have to fight venereal diseases. The students had to pass a special examination in Paris on July 24 before being included in the medical personnel.

Novo Vreme, Rumania, of July 7 stated that the cabinet has decreed that the Ministry of Social Policy and Health is authorized to summon for compulsory work all doctors, assistants, nurses, laboratory assistants, disinfectors and sanitary personnel, irrespective of sex or whether they are publicly or privately employed. Those over 70 are exempted and those above 60 and mothers with children under 18 are employable only in their place of residence. Aliens may not be summoned.

According to Radio Romania, July 12, the minister of health has decided that universities must admit an extra number of medical students, who are obliged to attend summer courses in hospitals, in order to increase the number of doctors. Students will follow summer courses in the town or country hospitals and will be supervised by doctors. All students from the first to the third year will follow summer classes. For women students there will be two months' practice and one month's holiday, and for men one month's practice and one month's holiday.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Tests to Determine Intelligence of Spastic Children.—An initial endowment of $5,000 has been given to the University of Southern California, Los Angeles, by the Crippled Children's Society of Los Angeles County and the California State Society for Crippled Children to undertake scientific research to develop tests for measuring the intellectual and performance capacities of spastic children. This particular phase of the study is being undertaken for the first time and will be supported over a period of five years. Volunteer public and professional organizations, as well as individuals dealing with spastic children, will have access to the psychometric clinic, which is a unit of the psychology department at the University of Southern California.

Labor Unions Endorse Blood Test.—The executive board of the California State Federation of Labor at its meeting held in Los Angeles, June 12, recommended that member unions require each applicant for membership to have a blood test made before admission into the union. The results of such tests are to be a matter of strict confidence between the examining physician and the applicant. The results, under no circumstances, are to be revealed to the union or to the employer and will have no bearing on the applicant's admission into the union. So far as is known, this is the first time that union labor has taken this sort of action anywhere in the United States, according to *California's Health*.

Anesthetists Needed.—Anesthetists are being sought by the Los Angeles County Civil Service Commission for positions in the Los Angeles County Department of Charities to render professional medical services in the care and treatment of patients in anesthesia services. Men or women who have graduated with a degree of M.D. from an approved medical school and who have completed at least a one year internship in an approved hospital are wanted for these positions. There are no maximum age limits nor residential requirements. Full information can be obtained from the office of the commission, Room 102, Hall of Records, Los Angeles 12. Applications must be filed on or before September 18.

CONNECTICUT

Clinical Congress.—The annual clinical congress of the Connecticut State Medical Society will be held at the New Haven Medical Association, New Haven, September 28-29. Among the speakers will be:

Dr. Alexander W. Winkler, New Haven, Insulin Derivatives and Their Combined Use.
Dr. Cyril N. H. Long, New Haven, Recent Progress in the Problem of Shock.
Dr. Edward L. Howes, Washington, D. C., Débridement, Not Chemotherapy, Heals Wounds.
Dr. Robert M. Lewis, New Haven, Caudal Anesthesia.
Dr. Robert C. Batterman, Brooklyn, Demerol, a New Synthetic Analgesic: Its Indications as a Substitute for Morphine.
Comdr. Francis J. Braceland (MC), U. S. Naval Reserve, Fatigue and Anxiety.
Dr. Nolan D. C. Lewis, New York, Electric Shock Therapy in Psychoses—Indications and Present Status.
Dr. Harry Gold, New York, Newer Digitalis Crystalline Compounds.
Dr. Paul L. Boisvert, New Haven, Tetanus Toxoid for the Civilian Population.
Dr. Bernard S. Brody, New Haven, Osteomyelitis of the Skull.
Dr. James A. Evans, Boston, Problems of Thrombophlebitis and Pulmonary Embolism.
Francis H. L. Taylor, Ph.D., Boston, The Problem of Nutrition in the Presence of Excessive Nitrogen Requirement in Severely Ill Patients.
Lieut. Col. Francis R. Dieuaide, M. C., A. U. S., Malaria.

One session will be devoted to a discussion of modern knowledge of pulmonary disease with the following speakers: Drs. Francis G. Blake, New Haven, on "Acute Infections of the Lung"; H. McLeod Riggins, New York, "Some Difficulties in the Differential Diagnosis of Certain Pulmonary Diseases"; Kirby S. Howlett Jr., Shelton, "Recent Trends in the Therapy of Pulmonary Tuberculosis"; Leonard Greenburg, New York, "Industrial Pulmonary Problems," and Gustaf E. Lindskog, New Haven, "New Trends and Results in Surgical Therapy of Lung Suppuration." A series of demonstrations by members of the staff of Yale University Medical School is also planned.

GEORGIA

Annual Registration of Licentiates of State Examining Boards.—On September 1 the Joint Secretary, State Examining Boards, started mailing to all licentiates of the State Board of Medical Examiners and of other Georgia state examining boards blanks to enable them to comply with the law requiring annual registration. No fees attach to such registration. Physicians will do well to execute the blanks furnished and to return them to the Joint Secretary as promptly as possible.

ILLINOIS

Personal.—Dr. Joseph H. Chivers, medical director of Crane Company, Chicago, has been appointed chairman of the advisory committee to the state division of industrial hygiene, succeeding the late Dr. Philip H. Kreuscher. Dr. Frederick W. Slobe, Chicago, a new member of the committee, was named vice chairman.

Chicago

Fremont Chandler Named Professor of Orthopedic Surgery.—Dr. Fremont A. Chandler, associate professor of orthopedic surgery at Northwestern University Medical School, has been appointed professor of orthopedic surgery and head of the department at the University of Illinois College of Medicine. Dr. Chandler will also be director of the Illinois Surgical Institute for Children. He succeeds Dr. Henry B. Thomas, who is retiring at the university after an affiliation since 1909. Dr. Thomas was instrumental in establishing the surgical institute for children which opened for patients in May 1931.

Eye and Ear Infirmary Now Directed by Welfare Department and Illinois University.—The physical plant of the Illinois Eye and Ear Infirmary will be under the supervision of the state department of public welfare and all professional activities and all personnel connected with professional activities will be under the direction of the University of Illinois College of Medicine in accordance with an agreement recently announced by the university. Despite their appointments to Illinois, the members of the infirmary staff will retain their positions in other universities as well, and students of other Chicago universities will be given the clinical facilities of the infirmary as in the past. Dr. Harry S. Gradle, chief of staff of the Illinois Eye and Ear Infirmary, under the new setup becomes professor of ophthalmology at the medical school. Dr. Peter C. Kronfeld, dean of instruction at the infirmary, will become associate professor of ophthalmology at the medical school and director of education in ophthalmology.

INDIANA

State Medical Meeting.—The ninety-fourth annual session of the Indiana State Medical Association will be held in conjunction with the Ninth Naval District at the Claypool Hotel, Indianapolis, September 28-30, under the presidency of Dr. Carl H. McCaskey, Indianapolis. Out of state speakers will include:

Senior Surgeon Herman E. Hilleboe, medical officer in charge of Tuberculosis Control Section, U. S. Public Health Service, Tuberculosis Control in Industry.
Admiral Ross T. McIntire, surgeon general, U. S. Navy, Navy Medical Services in Combat.
Dr. Reed M. Nesbit, Ann Arbor, The Modern Treatment of Prostatic Cancer—A Rational Basis for Delayed Hormone Therapy.
Dr. Norman H. Jolliffe, New York, The Cause, Signs and Treatment of Malnutrition.
Comdr. John F. Luten (MC), U. S. Navy, Battle Casualties with Special Reference to the Use of Sulfonamides.
Dr. Ernest Perry McCullagh, Cleveland, The Use of Gonadal Hormones in General Medical Practice.
Brig. Gen. George F. Lull, M. C., U. S. Army, The American Doctor in the War.
Capt. Joseph A. Tartre, senior dental officer, Ninth Naval District, Navy Dental Corps at the Great Lakes Naval Training Station.
Col. Thomas T. Mackie, M. C., U. S. Army, Tropical Diseases—A War and Postwar Problem Affecting the Continental United States.
Dr. John M. Waugh, Rochester, Minn., Vaginal Hysterectomy: Indications and a Method.
Dr. Peter C. Kronfeld, Chicago, Indications for Paracentesis of the Anterior Chamber.
Dr. George J. Thomas, Pittsburgh, Pentothal Sodium, Range of Usefulness, Complications and Their Management.

Dr. Harry S. Gradle, Chicago, will address the breakfast meeting, September 29, and Rear Admiral John Downes, Commandant, Ninth Naval District, will speak in the afternoon. The annual banquet will be held Wednesday evening with Dr. Herman L. Kretschmer, Chicago, President-Elect of the American Medical Association, speaking on "War Problems Faced by the Medical Profession." A new feature of the program this year will be sixteen instructional courses to be held Tuesday at the Claypool Hotel. Each course will accommodate twenty members. Included among the subjects will be the treatment of pneumonia, recognition and treatment of

common skin diseases, routine antepartum examination and care, undulant fever, tularemia, Rocky Mountain spotted fever, recognition and treatment of early tuberculosis and neuropsychiatric aspects of every patient.

MARYLAND

Hospital News.—The resident staff of Mercy Hospital, Baltimore, recently inaugurated a program of weekly meetings. On July 16 Dr. Henry F. Zangara spoke on "The Rh Factor and Its Relationship to Erythroblastosis Fetalis," and Dr. John C. Osborne on "Tetrathionate." A new program of medical motion pictures has also been launched at the hospital. A film on "Inguinal Hernioplasty," sponsored by the Singer Sewing Machine Company, was shown on July 12.

Friedenwald Award Goes to Thomas Brown.—The American Gastroenterological Association has awarded its 1943 Julius Friedenwald Medal to Dr. Thomas R. Brown, associate professor emeritus of medicine, Johns Hopkins University School of Medicine, Baltimore. Coincidentally the July issue of *Gastroenterology* was dedicated to Dr. Brown in recognition of his many accomplishments as a clinician and a teacher and to mark his contributions in the field of gastroenterology. Dr. Brown graduated at Johns Hopkins in 1897.

MASSACHUSETTS

Tufts Observes Fiftieth Anniversary.—The Tufts College Medical School, Boston, will celebrate its fiftieth anniversary with a number of exercises, September 15-October 6. Included on the program will be a talk at the medical school, September 15, by Major Gen. James C. Magee on "Military Medicine with Special Reference to Tropical Diseases"; a lecture before the William Harvey Society, September 16, at the Beth Israel Hospital by Dr. Timothy Leary, professor emeritus of pathology at the school, on "Excess Cholesterol as a Pathogenic Agent," and a talk September 29 by Col. Raymond W. Bliss. On September 22 a feature of the celebration will be the presentation and unveiling of portraits of Dr. Leary and Dr. Cadis Phipps, professor of medicine. The anniversary exercises will conclude on October 6 with a general meeting at the John Hancock Hall, at which the speakers will include Leonard Carmichael, LL.D., president of Tufts College, and Capt. A. Warren Stearns (MC), U.S.N.R., dean of the medical school, now on military leave. Another feature of the celebration will be the release of a book on the history of Tufts College Medical School, written by Dr. Benjamin Spector, professor of anatomy and professor of the history of medicine, which is said to be the first published history of the school.

MISSOURI

Physician Marks Ninety-Second Birthday.—A reception was held at the Lucerne Hotel on August 25 to celebrate the ninety-second birthday of Dr. Caleb Anderson Ritter, Kansas City. Dr. Ritter graduated at the Indiana Medical College, Indianapolis, in 1877. He is an Affiliate Fellow of the American Medical Association.

Starkloff's Name Added to St. Louis Hospital.—The St. Louis City Hospital (The Max C. Starkloff Memorial) is the new designation of the hospital in accordance with action taken recently to honor the first health commissioner of St. Louis, who served thirty years under five mayors. A bill was recently adopted changing the name to Max C. Starkloff Hospital, but, through the efforts of the medical staff, this action was repealed and the compromise name adopted.

Physicians Resign Because of New Full Time Health Policy.—Dr. James L. Mudd, since 1935 tuberculosis controller of St. Louis, and Dr. Hyman I. Spector, chief of the medical, dental and nursing section of the St. Louis Health Department, have resigned, effective September 1. The resignations were the result of the new full time policy for physicians serving in executive capacities. The policy was recommended by the civil service commission and passed by the board of aldermen.

NEBRASKA

Annual Registration Due On or Before October 1.—Physicians licensed to practice medicine in Nebraska are required by law to register with the Department of Public Welfare annually on or before October 1 and to pay a fee of $1. A license expires if the licentiate fails to register, but within the thirty days next following its expiration it may be revived by the payment of the registration fee and a penalty of $1. If that is not done, an order of revocation is issued and thereafter the revoked license can be reinstated only on the recommendation of the board of examiners in medicine and on the payment of the renewal fees and penalties then due.

NEW JERSEY

Personal.—Dr. George W. Tyrrell was guest of honor at a banquet on July 29 given by the medical profession of Perth Amboy and vicinity in honor of his completion of fifty years in the practice of medicine. Dr. Tyrrell has been a member of the staff of the Perth Amboy General Hospital from its inception and was dean from 1927 to 1935.

Officers of State Medical Agencies.—Dr. John H. Rowland, New Brunswick, was elected president of the New Jersey State Board of Medical Examiners on July 14 to succeed Dr. Samuel Barbash, Atlantic City. Newspapers report that he is the first New Brunswick physician to head the board. Dr. Earl S. Hallinger, Camden, was reelected secretary. Dr. James Mallory Carlisle, Westfield, was elected president of the state board of health at a meeting on July 13.

Dr. Bristol Declines State Health Appointment.—Dr. Leverett D. Bristol, Montclair, health director of the American Telephone and Telegraph Company, has declined the position of state director of health to which he was recently elected (THE JOURNAL, July 31, p. 959), the New York *Times* reported on August 18. In a statement to the press, Governor Charles Edison said Dr. Bristol's reasons for declining the position were set forth in a letter marked "personal and confidential" and that he was not free to reveal them.

NEW YORK

Grant to Install Blood Bank.—A grant has been awarded by the government Office of Civilian Defense to the Arnot-Ogden Memorial Hospital in Elmira for the installation of a blood and plasma bank. The bank is one of many scattered within the 300 mile limit along the eastern coast for the purpose of maintaining an adequate supply of frozen plasma for possible civilian disasters and accidents in war factories.

Dr. Bigelow Named Assistant Commissioner of Mental Hygiene.—Dr. Newton J. T. Bigelow, Brentwood, clinical director of the Utica State Hospital, Utica, has been appointed superintendent of the Hudson River State Hospital, Poughkeepsie, and acting assistant state commissioner of mental hygiene. Dr. Bigelow will "fill the military absence of the present assistant commissioner," Dr. Harry Beckett Lang, Albany.

Building for Manufacture of Plasmochin.—The Winthrop Chemical Company at Rensselaer is constructing a $75,000 building to be devoted exclusively to the production of plasmochin. Completion of the building is expected by September 15, but operation will not start until about November 15. The new facilities are expected to increase the company's plasmochin production capacity about 300 per cent. The new building is located on the company's 27 acre plant property. One story high, the new unit is one of twenty-six manufacturing, laboratory and office buildings operated by Winthrop in Rensselaer. For the production of penicillin a building outside the factory grounds has been leased.

Postgraduate Lectures.—Two lectures on hypertension will be delivered before the Onondaga County Medical Society and the Syracuse Academy of Medicine in Syracuse, October 19, under the auspices of the state medical society and the state department of health. Dr. Herman O. Mosenthal, clinical professor of medicine, New York Post-Graduate Medical School and Hospital, Columbia University, will discuss the classification and medical treatment of hypertension, and Dr. J. William Hinton, associate clinical professor of surgery at the school, the surgical treatment of hypertension. A lecture has been planned under the same auspices for the Delaware County Medical Society in Hamden, September 14, Dr. Roscoe D. Severance, Syracuse, speaking on "Pain In and Related to Adult Feet."

New York City

Rapid Treatment Center at Bellevue.—The Federal Works Agency has approved a grant of $290,000 to reconstruct one of the dormitory buildings at Bellevue Hospital for a rapid treatment center for venereal diseases and another grant of $272,718 for maintenance. A convalescent rehabilitation camp on Welfare Island is also included in the project.

Ledyard Fellowship.—The Society of the New York Hospital announces that applications for the Lewis Cass Ledyard Jr. Fellowship must be received by the committee by December 15 for the 1944-1945 award. The fellowship was established in 1939 by Mrs. Ruth E. Ledyard in memory of her late husband, a governor of the New York Hospital. The income, amounting to about $4,000 annually, will be awarded to an

investigator in the fields of medicine and surgery or in any closely related field. About $3,000 will be available as a stipend and approximately $1,000 for supplies or expenses of the research. In making the award, preference will be given to younger applicants who are graduates in medicine and who have demonstrated fitness to carry on original research of high order. Application for the fellowship should be addressed to the Committee of the Lewis Cass Ledyard Jr. Fellowship, the Society of the New York Hospital, 525 East 68th Street.

Program to Rehabilitate Men Discharged for Mental Illness.—The New York Hospital has established a psychiatric rehabilitation program to aid in reclamation of men rejected or discharged by the armed forces because of mental illness. According to the New York *Times* the private psychiatric project is said to be the first of its kind to operate in the metropolitan area. The Payne Whitney Psychiatric Clinic at the hospital has been conducting a special outpatient clinic since August 19 in cooperation with state selective service officials and social service agencies. Integration of psychiatric treatment with psychologic testing, retraining and employment is to be emphasized. The originators of the plan were Dr. Thomas A. C. Rennie, attending psychiatrist at the clinic and associate professor of psychiatry at Cornell University Medical College, who will direct the program, and Mrs. Kelly Simon, chief of psychiatric social service at the clinic. Dr. Rennie recently was named director of the division of rehabilitation of the National Committee on Mental Hygiene. The Commonwealth Fund has granted funds for the project. The clinic will serve as an actual treatment center for men in need of total overall service in their own rehabilitation and as a fact finding agency to determine the extent of the problem, the amount of help necessary for rehabilitation, the nature of psychiatric disabilities and what percentage of the patients treated may eventually be reemployed. It is expected that such facts may ultimately be of value in orienting federal authorities in their war and postwar rehabilitation planning. The social service agencies that will cooperate include the New York City Committee on Mental Hygiene, the Social Security Board, the United States Employment Service, the Vocational Adjustment Bureau, the American Rehabilitation Committee, the Community Service Society and the Young Men's Christian Association. The State Selective Service Board will refer cases to the clinic.

OREGON

Society Publishes Service Bulletin.—The Oregon State Medical Society has started the publication of a *Service Bulletin* to meet the growing need for a medium of exchange of news and information and, especially, of mailing addresses. The state society believes that, with a third of its men in service, the need has outgrown the capacity of its office to care for it. According to the *Service Bulletin* the journal *Northwest Medicine* has done its excellent best to fill the need, but, with three states to serve, it has neither the staff nor the space to cover these things in detail and still maintain its standard of scientific publication. The *Service Bulletin* will go to both physicians at home and in the field and to members of the society and to nonmembers. The bulletin was launched with the August issue and contains a roster of Oregon physicians in service with the most recent ranks and addresses that could be obtained. Needed information is indicated with an asterisk. In addition the bulletin contains news notes of medical activities of physicians in the state.

PENNSYLVANIA

Personal.—Dr. Loyal A. Shoudy, chief of medical service, Bethlehem Steel Company, Bethlehem, was recently presented with the title "Alumnus Summa Laude Dignatus" as a part of the commencement exercises of the University of Washington, Seattle, and represents the university's annual election to honor an alumnus. Dr. Shoudy graduated at Washington in 1904. ——A portrait of Dr. Thomas H. A. Stites was recently placed in the reception room of the surgery building at the Pennsylvania State Tuberculosis Sanatorium number 2 at Cresson to mark his recent retirement as medical director after serving for sixteen years (THE JOURNAL, May 29, p. 323). Dr. Stites has returned to his home in Nazareth and Dr. Benjamin Franklin Royer, Chambersburg, is acting medical director of the sanatorium.

Philadelphia

Report on Medical Art.—Dr. Samuel B. Sturgis, honorary director, department of medical art, College of Physicians of Philadelphia, recently made available his first report. The department was launched in 1940 following the gift by Dr. Sturgis of a collection of medical art. At that time Dr. Sturgis was asked to become honorary director or curator of the collection of medical art. The collection has now almost 7,000 items, covering prints, photographs and original documents, the subjects including buildings, certificates of membership, meeting notices, portraits, clinics, lectures, matriculation cards, medical celebrations, sculpture, medals and caricatures. The assembling of the collection was donated to the college by Dr. Sturgis. According to the first report, there are at least 200 more photographs and miscellaneous items to be incorporated. Eventually it is hoped to attend to such phases as medical drawings and illustrations. Among the contributors to the department of medical art have been Drs. William W. Keen, Astley P. C. Ashhurst, George E. de Schweinitz, Albert P. Brubaker, James M. Anders, all of whom are deceased, and Drs. William N. Bradley, Francis R. Packard, Edward B. Krumbhaar, Burton Chance, Samuel McC. Hamill, and Mrs. J. Hampton Carson and Mrs. Erwin F. Faber. The original collection, containing twelve completed portfolios of the Faber collection donated by Dr. Sturgis, is named the Sturgis Collection of Medical Art of the Colleges of Physicians of Philadelphia.

RHODE ISLAND

Clifford Beers Dies.—Clifford Whittingham Beers, founder and secretary of the American Foundation for Mental Hygiene, died on July 9 in Butler Hospital, Providence, after a long illness. He was 67 years old. Mr. Beers was born in New Haven, Conn., in 1876. He graduated at the Sheffield Scientific School, New Haven, in 1897. In 1908 Mr. Beers founded the Connecticut Society for Mental Hygiene, the first organization of its kind in the country. The following year he was instrumental in establishing a National Committee for Mental Hygiene, of which he served as secretary for a number of years. In 1928 he founded the American Foundation for Mental Hygiene, serving as its secretary. He organized and became secretary-general of the first International Congress on Mental Hygiene in Washington in 1930, establishing the same year the International Committee for Mental Hygiene. The following year he established the International Foundation for Mental Hygiene, also serving as its secretary. Mr. Beers was a member of many nationally known societies concerned with mental hygiene. He had received numerous awards for his work, including the Cross of Chevalier of the Legion of Honor by the French government in recognition of international work in mental hygiene and in 1933 the gold medal of the National Institute of Social Sciences for "distinguished services for the benefit of mankind." He was honored in 1934 by the publication of a presentation edition of "Twenty-Five Years After—Sidelights on the Mental Hygiene Movement and Its Founder," containing about five hundred twenty-fifth anniversary tributes, collected by the late Dr. William H. Welch, chairman of the Tribute Committee, appointed by the National Committee for Mental Hygiene in connection with the anniversary celebration. The author of numerous articles on mental hygiene, Mr. Beers outlined his early experiences in his autobiography "A Mind that Found Itself" first published in 1908. According to the New York *Times*, in 1900, overpowered by a delusion that he was doomed to a serious disease, he leaped from a fourth story window but suffered only a few broken bones in his feet. The suicide attempt, however, caused him to regard himself as a criminal, hunted by detectives. His family placed him in a private sanatorium, where he lived for two years, never speaking. In another institution he began to grope his way out of the darkness. He then conceived the idea of reforming insane asylums, and, to gather material for his crusade, actually fought his way into the violent wards of both a private and a state institution. He spent some three hundred hours in a strait jacket and was also committed to a padded cell. Eventually he got a letter through to the governor of Connecticut, and some of the more brutal attendants were discharged. Mr. Beers was finally released as cured in 1903. He returned to business in 1904 but in 1906 gave it up, resolved to devote his life to improving the condition of the insane and to aiding the mentally ill. He wrote and published his book in 1908.

TEXAS

Houston Post Publishes Baylor Section.—On July 31 the Houston *Post* published a supplement devoted exclusively to the Baylor University College of Medicine, Houston. The issue contained photographs, feature articles, lists of faculty appointments and general discussions of the activities of the school, which recently moved from Dallas to Houston.

GENERAL

Society for Research in Psychosomatic Problems.—Information has just been received concerning the first annual meeting of the American Society for Research in Psychosomatic Problems held in Detroit in May, at which Dr. Winfred Overholser, Washington, D. C., was named president-elect; Dr. Tracy J. Putnam, New York, president, and Dr. Edwin G. Zabriskie, New York, secretary-treasurer. Dr. Adolf Meyer, professor emeritus of psychiatry, Johns Hopkins University School of Medicine, Baltimore, was chosen honorary president. The constitution was unanimously adopted and research committees on psychosomatic problems appointed in obstetrics and gynecology, early infancy and childhood, physiologic mechanisms and the psychosomatic implications of animal experimentation, psychosomatic teaching in medical schools, psychoanalytic research in psychosomatic problems, psychosomatic approach to social and cultural problems and psychosomatic problems in war medicine, internal medicine and industrial medicine. The meeting was held in conjunction with the meeting of the American Psychiatric Association. The society was created last year but the formal organization was delayed until the joint meeting with the American Psychiatric Association in Detroit.

Academy of Neurological Surgery.—The sixth annual meeting of the American Academy of Neurological Surgery will be held at the Percy L. Jones General Hospital, Battle Creek, Mich., September 17-18, with hotel headquarters at the Hart Hotel. Brig. Gen. Joseph E. Bastion, M. C., U. S. Army, commanding general of the hospital, will give the address of welcome. Major Frank H. Mayfield, M. C., A. U. S., will deliver the presidential address on "Some Notes on the History of the Army Medical Department." Speakers will be:

Lieut. Jose M. Ferrer Jr., M. C., A. U. S., Penicillin Therapy.
Capt. Preston C. Iverson, M. C., A. U. S., Skin Grafting for Decubitus Ulcers.
Col. Robert H. Kennedy, M. C., A. U. S., The Use of Local Antiseptics.
Col. Walter B. Martin, M. C., A. U. S., Malaria, A Military and Public Health Problem.
Lieut. Col. Paul A. Petree, M. C., A. U. S., The Psychoneuroses with Emphasis on the Battle Reaction.
Major Paul L. Cusick, M. C., A. U. S., Common Problems Associated with the Optic Nerve.
Major Ross M. Newman and Capt. James G. Irving, M. C., A. U. S., Care of Neurogenic Bladder.
Lieut. Col. David Reeves, M. R. C., Some Unusual Cranial Neoplasms Encountered at the Hoff General Hospital, Santa Barbara, Calif.
Major Barnes Woodhall, M. C., A. U. S., Demonstration of the De Jong Stimulator.
Capt. George S. Baker, M. R. C., New Methods of Treatment for Osteomyelitis of Skull in War Casualties.
Dr. Rupert B. Raney, Los Angeles, The Similarity of Symptoms Resulting from Certain Cauda Equina Tumors and Herniated Intervertebral Disk.
Dr. John E. Raaf, Portland, Ore., Electroencephalographic Studies Immediately Following Head Injury.
Dr. Theodore C. Erickson, Madison, Wis., The Cortical Representation of the Sacral Segments.
Dr. A. Earl Walker, Chicago, Studies on Concussion.
Lieut. Comdr. Charles Hunter Shelden (MC), U.S.N.R., Observations on Monkey Cerebrum Through Lucite Calvarium.

There will be a roentgenologic conference Saturday conducted by Lieut. Col. Joseph C. Bell, M. C., A. U. S., and a symposium on amputations by Major Mayfield, Capt. Fred F. Senerchia Jr., M. C., A. U. S., Lieut. Col. Francis McKeever, M. C., A. U. S., and Comdr. James C. White, (MC), U.S.N.R.

Approve Expansion of Firms for Manufacture of Penicillin.—Nine companies have received authority from the War Production Board to build new facilities to increase the production of penicillin, the New York *Times* reported on August 30. Four of the concerns and three others have been producing the drug, but five are entering as newcomers in the field, it was stated. The total cost of the expansion for the nine firms will exceed $3,000,000. Although the army gets only 50 per cent, other units of the armed forces, as well as maritime workers, receive their share, and large supplies are needed for continued research and tests. Control of the drug for civilian use is vested in Dr. Chester S. Keefer, Boston, chairman of the committee on chemotherapeutics, National Research Council. By agreement of the agencies working to develop penicillin, every gram allocated to civilians goes to Dr. Keefer and he passes it along to hospitals for clinical tests or to specific physicians. The nine companies which have applications approved for expansion are the Abbott Laboratories, North Chicago, $239,000; Reichel Laboratories, Kimberton, Pa., for its laboratories at Phoenixville, Pa., $532,831; Upjohn Company, Kalamazoo, Mich., $100,000; Bayer Company, a division of Sterling Drug Company, Inc., manufacturing for Winthrop Chemical Company, at Rensselaer, N. Y., $50,000; Commercial Solvents Corporation, Terre Haute, Ind., $441,700; Eli Lilly & Co., Indianapolis, $370,000; Lederle Laboratories, Inc., Pearl River, N. Y., $880,596; Schenley Research Institute, Lawrenceburg, Ind., $24,781, and Cutter Laboratories, Berkeley, Calif., $420,664. Abbott, Reichel, Upjohn and Winthrop were already producing penicillin, as well as the Merck Company of Rahway, N. J., Charles Pfizer & Co. of Brooklyn and E. R. Squibb & Co. of New York City, which had already enlarged their facilities.

LATIN AMERICA

Health Activities in Latin America.—In July a five year maintenance plan was proposed for Central America covering projects in Costa Rica, Nicaragua, Honduras, El Salvador and Guatemala, according to the Newsletter of the Health and Sanitation Division of the Coordinator of Inter-American Affairs. The plan was submitted by Dr. Eugene P. Campbell, field director for Central America, and Lieut. Col. Henry W. Van Hovenberg, chief of party in El Salvador. Maintenance would consist in expenditures for labor to make repairs in malaria control ditching, sewage disposal plants, health centers and slaughterhouses.

Public Health Conference.—The Central American Public Health Conference in El Salvador, July 12-16, included field trips and conferences. Projects visited were the malaria control work in Sonsomate and Acajutla, the health center in Santa Tecla, the health center in Santa Ana, the malaria control work and sewage treatment plant in San Miguel, and the venereal disease clinic in El Salvador. Among the subjects discussed at the conference meetings were the feasibility of combining care and preventive measures in health centers, the problem of malaria control, tuberculosis control, child hygiene, control of communicable disease, health education, statistics and laboratory procedures.

Construction.—In Bolivia the uncompleted construction of the former Italian Club in La Paz was purchased to house the ministry of health, and health center. The building of a hospital is under consideration at Guayaramerin. New health centers are planned for Bolivar, Colombia, and in Ecuador a new health center and dispensary will be erected in Quito; renovation has started on the children's clinic there. Approval has been given to plans to reinforce the medical school building at the University of Guayaquil. The erection of a new hospital is planned in Manta and the completion of one in Bahia de Caraques. An important undertaking in Tegucigalpa is the construction of a building to serve as a public health department for Honduras and the public health center for the city. The building is located in the center of the town on a site donated by the Honduras government.

Health Education.—In Brazil the ministry of health and education has authorized the establishment of a fellowship program in addition to the program now operating under the direction of the Institute of Inter-American Affairs. Ninety-three scholarships for the National School of Nursing have been been provided by the various departments in Colombia.

Care for Rubber Workers.—Interest in the medical care of rubber workers in the republics is evidenced in the various plans set up. In Colombia plans have been completed for a 40 bed hospital at Miraflores and for 30 bed institutions at La Chorrera and Araracuara. Under construction are 20 bed floating hospitals for use on the Caqueta and Putumayo rivers. The floating units will weigh about 70 tons and be constructed on wooden, flat bottomed barges. The construction of small dispensaries has been approved by the Rubber Development Corporation on the banks of rivers to supplement the larger hospital units. In Guyaquil, Ecuador, twelve dispensaries planned in the medical care program for rubber workers are now in operation; only four stations are accessible by regular means of communication, the others requiring either mule or canoe trips. Three "practical doctors" were sent to the Mosquitia portion of Honduras during June to supply medical aid to the rubber gatherers; the chief of the group will be stationed at Brewers Lagoon. This is a part of a program recently launched to care for rubber tappers in remote malaria infested jungles of Central America by a new type of roving doctor (THE JOURNAL, July 17, p. 822).

Personal.—Dr. John J. Phair, epidemiologist in the division of health and sanitation, left Washington on August 6 to spend about six weeks in Chile as a consultant in methods of controlling meningitis. Dr. George C. Dunham, director of the division of health and sanitation, returned to Washington on August 2 after an extended trip to Mexico, Brazil, Panama and Colombia. Dr. Charles Cadwallader, medical officer with the field party in Brazil, was sent to Bogotá, Colombia, August 17, for four months to assist in the development of a program for marine air inspection quarantine regulations for the Colombian government.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 17, 1943.

Army Medical Service in the Field

Lieut. Gen. Sir Alexander Hood, director general of the army medical services, has described the steps taken to adapt the medical services in the field to the needs of modern warfare. The essence of the new organization is the more advanced stations of surgeons and the swifter provision of surgical treatment. The new chain of evacuation of casualties differs slightly from the old. It is (1) the regimental aid post, (2) the casualty collecting post, (3) the advanced dressing station, (4) the field dressing station, (5) the advanced surgical center, (6) the casualty clearing station and (7) the general hospital. For the second link in the chain, the casualty collecting post, there is a new type of officer, who is not a doctor but is frequently drawn from the personnel of the army medical corps. He is equipped with a motorcycle, and his duty is to expedite and organize the rearward movement of casualties.

At the third link, the advanced dressing station, is stationed a surgeon who examines the casualties, and on his judgment their further movement depends. Those requiring an urgent operation bypass the next link, the field dressing station, and are taken straight to the fifth, the advanced surgical center. Those suffering from shock go to the field dressing station for resuscitation treatment. All other cases, having had their front line treatment completed, miss out two links and go straight to the casualty clearing station.

The advanced surgical center marks the greatest improvement in the system. It contains a field dressing station, a field surgical unit and a field transfusion unit. The field surgical unit is new and saved many lives in North Africa. It consists of a surgical team with equipment for one hundred operations and is provided with 20 beds in case it is desirable to retain patients for a time. When circumstances permit nursing, sisters are attached to it. This is the most advanced point at which they serve.

Another innovation is the parachute field ambulance surgical team, which is dropped with the troops with its equipment in containers. This was used last November in Tunisia, and numerous operations were performed not only on British troops but on German prisoners and on Arabs wounded in air raids. Lieut. C. G. Rob, the first paratroop doctor to win the military cross, performed a heroic feat. When dropped by parachute he broke his leg. Nevertheless he carried on. When the blood transfusion supplies gave out he took a pint of his own blood for a patient. The citation states that he performed some one hundred and forty operations after being dropped by parachute, in many cases under enemy bombing.

In the North African compaign a unique incident took place. A British officer was director of the medical services of all the allies engaged and there was the fullest cooperation. On one occasion the Americans urgently required a 200 bed hospital. It was provided by the British and actually flown to the point where it was required.

Among other novelties are the Nuffield anesthetic apparatus, which enables ether to be administered in the tropics, formerly difficult if not impossible, and the chloroform capsules, used to get the seriously wounded out of tanks.

Leprosy in the British Empire

At a meeting of the British Empire Relief Association it was stated that there are still over 2 million persons with leprosy in the British Empire. The money now available under the Colonial Development and Welfare Act allows our colonies to provide adequate measures of prevention and treatment. It was suggested that a second research station, besides the one at Calcutta, should be established, with facilities for training leprosy workers. Sir Cuthbert Sprawson pointed out that seventy-one years after the discovery of the leprosy bacillus there is probably more leprosy in the world than when it was discovered. But there was another side to the picture. In the past twenty to thirty years the care of persons with leprosy had improved and the atmosphere of leprosy hospitals had changed to one of hope. The benefit given by the hydnocarpus oils, introduced in 1916 by Sir Leonard Rogers, drew patients to the hospitals and allowed the doctor to instruct the patient and the public. We have learned that it is of no use to attempt propaganda and preventive treatment among a primitive population unless it is combined with curative treatment. Increased knowledge of nutrition has helped, for poverty, entailing insufficient and improper feeding, is an important predisposing cause of leprosy. Knowledge of prevention has increased, but methods of segregation must be adapted to local customs and prejudices. Field research has shown that many persons with mild attacks of leprosy recover spontaneously, sometimes without knowing that they have had the disease. We have learned how important it is to keep the patients exercised and occupied in some useful work. Special institutions are necessary for those who have passed through the contagious stage but are left crippled or are too old or too feeble for work.

Restoration of Museum of Royal College of Surgeons

The wrecking of the greatest pathologic and anatomic museum in the world—that of the Royal College of Surgeons—by German bombs has been described previously (THE JOURNAL, July 8, 1941, p. 58; Feb. 28, 1942, p. 747). Nearly two thirds of the specimens were destroyed, including much that was irreplacable, such as the Hunterian collection. Within a few weeks the council of the college set up a committee under the chairmanship of Prof. Grey Turner to plan a new museum based on the surviving specimens and the traditions of the old but adapted to present conditions, which differ vastly from those of a hundred and fifty years ago when the museum was founded by the government's purchase of John Hunter's great collection. The museum was then the only one of the kind, but now every medical school has formed its museum. The museum will be devoted to the development, structure and functions of man and his diseases. Comparative anatomy will be retained only as far as it throws light on the anatomy and functions of the human body in health and disease. Anthropology will be retained, but greater discrimination will be used in this subject. The Hunterian collection will be restored as far as possible by replacement of the destroyed specimens and by making copies of models based on records, illustrations or recollection. It will not be separately exhibited but distributed among the appropriate sections.

It is recommended that the museum shall consist of two sections—anatomy and pathology—and that the council shall establish chairs for the control of these: chairs of human and comparative anatomy and human and comparative pathology. For reconstituting the series of anatomic dissections the committee has obtained the help of leading teachers of anatomy. The object is to display the structure of the body from every possible aspect and at all ages, comprising normal (including microscopic) anatomy, topography and applied anatomy, surgical anatomy, embryology and senile changes. Restoration of the pathologic collections offers less difficulty. Selected members of the Royal Society of Medicine are being organized to make a systematic collection. Regional pathology will be developed primarily for the expert, as the needs of the student are largely met by the museums of the medical schools. There will be sections of military surgery, forensic medicine and

industrial diseases; also a historical section, which will include Hunterian and post-Hunterian relics, and one devoted to the evolution of modern surgical instruments. A new feature is a series of x-ray films or lantern slides of films and exceptional cinematographic films of surgical conditions and operations.

BRAZIL

(From Our Regular Correspondent)

July 15, 1943.

Special Public Health Service for the "Rubber Army"

Dr. George C. Dunham, Medical Corps, U. S. Army, and director of the Division of Health of the Bureau of the Coordinator of Inter-American Affairs, arrived at the Calabouço airport of Rio de Janeiro, July 11, during the course of an inspection trip of the health and sanitation projects now under way in Brazil. Mr. Jefferson Caffery, American ambassador in Brazil, Dr. Dunham and Hon. Gustavo Capanema, minister of health of Brazil, signed a contract a few months ago to start a medical and sanitary organization named Serviço Especial de Saude Publica (Special Service of Public Health) and known as the SESP, to take charge of the main tasks of the health work in the Amazon basin, where there are millions of rubber trees loosely scattered over the largest fluvial basin in the world, and in the Rio Doce valley, where large iron deposits are located, besides some relatively minor projects, like the construction and operation of a first class nursing school at the University of São Paulo. Both in the Amazon basin and in the Rio Doce valley tropical malaria is highly prevalent. The American representative of the Division of Health of the Coordinator of Inter-American Affairs in Brazil is Dr. George M. Saunders, a specialist in tropical medicine, with many years of practice of this kind of work in the Virgin Islands and in West Africa. Important sanitary engineering projects are being carried out at and around the cities of Belem, state of Para, and Manaos, state of Amazonas (present populations 220,000 and 115,000 respectively). Smaller drainage projects are being executed at secondary fluvial harbors such as Altamira, Breves, Santarem, Rio Branco, Val de Cans and Porto Velho, where sanitary centers have been organized to introduce health education and propaganda and medical and sanitary assistance into adjoining areas. Six large launches are being built to develop this medical work, and twelve smaller motor boats are already at work, with doctors, nurses and pharmacists. This is the beginning of a future large fleet of medical floating clinics to be operated beside many more fixed dispensaries, which will be located at the most strategic points in connection with endemic malaria. In Santarem a special hospital with 50 beds is being built, and in Breves a first class large malaria clinic is in course of organization. The headquarters of the whole Amazon health organization is in Belem, at the mouth of the river, where a great entomologic laboratory is already functioning. A subordinate laboratory will be created at Manaos, 1,000 miles up river. Many thousand immigrants from the semiarid northeastern states of Brazil have been moved to the Amazon basin, and this human flow, called the "Rubber Army," is continuing to be driven into the area. This is a tremendous task, because the rubber collecting workers have to be attracted, subjected to a careful medical examination, educated in the principles of individual malaria control and effectively protected against the disease during the trip, mainly overland, through malaria infested districts. An important work to be done from the very beginning is the dietetic education of these backward agricultural workers and the effective protection of them against many more health hazards, including venomous snakes. A chain of medical centers and food dispensing establishments has been organized along the inland routes, and special dietitians have been placed at these medical centers. In the Rio Doce valley the work is not so well developed yet as in the Amazon basin, but previous surveys have demonstrated that malaria is also very prevalent in the region. As minor tasks of the SESP there are several training centers for medical specialists, nurses, nurse's aides, laboratory technicians and sanitary inspectors.

Brief Items

Dr. Edgard Schneider, president of the University of Porto Alegre, Rio Grande do Sul, Brazil, has been invited by the U. S. government to visit the principal universities of the United States. The University of Porto Alegre includes five institutions: the Law School, the Medical School, the Engineering School, the School of Pharmacy and Dentistry and the School of Sciences.

Dr. Ernani S. Pereira has been appointed chief of the medical service of the Division of Personnel of the municipality of Rio de Janeiro, succeeding Dr. João B. Canto, whose death has been reported in a previous letter.

Drs. Paulo Elijalde and Nilton Costa presented to the Brazilian Anatomic College a paper on the pathology of silicosis in the gold mines of Brazil. The lecture was illustrated by photographs, photomicrographs, x-ray films and anatomic specimens of the cases presented. They discussed the correlation of the disclosed lesions with pneumonia and with tuberculosis. For some time silicosis has been studied in Brazil particularly in connection with the Morro Velho and the Passagem gold mines, and several interesting papers have been published by Drs. C. M. Teixeira, M. Curty, E. Macedo, O. Barbosa, M. Moreira and Araujo Lima in the scientific bulletins of the National Department of Mineral Production.

Dr. Aloysio de Castro, professor of medicine at the University of Rio de Janeiro, has been elected president of the Brazilian Academy of Medicine.

Dr. Clementino Fraga, recently retired as professor of medicine of the University of Rio de Janeiro, has been elected professor emeritus by the University of Salvador, state of Bahia. Before being professor at Rio de Janeiro, Dr. Fraga held the same position for several years at the University of Salvador.

Dr. Barbosa Vianna, professor of pediatric surgery and orthopedics at the University of Rio de Janeiro, has been elected to the presidency of the Brazilian Anatomic College.

Death of Dr. Antonio Fontes

Dr. Antonio Cardoso Fontes, director of the Oswaldo Cruz Institute, has died at the age of 64. As soon as he received his medical degree Dr. Fontes began to work as an assistant of Oswaldo Cruz in 1902 in the preparation of antiplague serum and vaccine, for the first time in Brazil, to combat a disease that had entered the country through the ports of Santos and Rio de Janeiro. This serologic work was the origin of the present Oswaldo Cruz Institute at Manguinhos, near Rio de Janeiro. After the work against plague, Dr. Fontes followed Oswaldo Cruz as one of his principal assistants in the campaign to eradicate yellow fever from Rio de Janeiro (1902-1908). As an investigator at the Oswaldo Cruz Institute Dr. Fontes specialized in the study of the tubercle bacillus. He is known as the inventor of a special method to stain the bacillus and as a pioneer in the demonstration of the filtrable phase in the life cycle of the bacillus. Dr. Fontes was a member of several Brazilian and foreign scientific associations. The scientific papers of Dr. Fontes are numerous, particularly in the fields of plague (1902-1908) and the biology of the tubercle bacillus (1910-1935). In the last few years Dr. Fontes was deeply interested in the problem of cancer, this being the reason of his last visit to the United States in 1942. He succeeded Dr. Carlos Chagas in 1934 as director of the Oswaldo Cruz Institute, in which post his administrative work is as laudable as his scientific studies. A few months ago his name was placed in the Brazilian Book of Merit.

Deaths

Edward Ross, Brooklyn; University of Louisville School of Medicine, 1936; diplomate of the National Board of Medical Examiners; appointed first lieutenant in the medical reserve corps, U. S. Army, June 26, 1936; reappointed first lieutenant on June 26, 1941; served with the 245th Coast Artillery Regiment from Jan. 11, 1941 until May 10, 1942, when he was relieved from active duty and reverted to inactive status; was honorably discharged on May 5, 1942 by reason of physical disqualification; promoted to temporary captain, Army of the United States, Feb. 1, 1942; named ship surgeon in the U. S. Merchant Marine in June 1942; aged 30; died recently in the Medical Center, Stephen V. Harkness Pavilion for Private Patients, New York, of acute pancreatitis.

Samuel Ernest Fletcher, Chicopee, Mass.; Boston University School of Medicine, 1892; served two terms as mayor of Chicopee; city bacteriologist and formerly city physician; for several years chairman of the library commission, member and chairman of the school committee and board of health; examiner for the Selective Service System recently and also during World War I; served as president of the chamber of commerce, director of the Chicopee Cooperative Bank and the Cabot Trust Company; a member of the staff of the Wesson Maternity Hospital, Springfield; consulting physician, past president and for many years chief of the staff of the Wesson Memorial Hospital, Springfield, where he died, June 22, of carcinoma of the bone, aged 76.

Robert Lee Bradley ● Roswell, N. M.; University of Louisville (Ky.) Medical Department, 1890; councilor of the Fifth District and past president of the New Mexico Medical Society; formerly member, vice president and secretary of the New Mexico Board of Medical Examiners; served as president of the Pecos Valley District Medical Society; fellow of the American College of Surgeons; a captain in the medical corps of the U. S. Army during World War I; at one time mayor of Roswell; served as president of the Roswell National Bank and as vice president of the First State Bank and Trust Company; member of the staff of St. Mary's Hospital; aged 76; died, June 19, of uremia.

Calvin Edward Bradley, Tulsa, Okla.; Barnes Medical College, St. Louis, 1905; member of the Oklahoma State Medical Association, Oklahoma State Pediatric Society and the American Academy of Pediatrics; specialist certified by the American Board of Pediatrics, Inc.; vice president and formerly a member of the state board of medical examiners; served as a captain in the medical corps of the U. S. Army and later with the British army during World War I; was decorated by the British government for gallantry; on the staffs of the Hillcrest Memorial and St. John's hospitals; aged 58; died, July 6, of heart disease.

John Wilson Elder ● Albuquerque, N. M.; Western Pennsylvania Medical College, Pittsburgh, 1892; a major in the medical corps of the U. S. Army during World War I; active in the National Guard in Pennsylvania and New Mexico; for many years surgeon in charge of the Santa Fe Coast Lines Hospital; formerly associated with the Indian Service; served as superintendent of the Laguna Sanatorium for Tuberculosis; recently district health officer for Bernalillo and Sandoval counties; had been health officer in several districts in New Mexico; aged 78; died, June 9, of cerebral hemorrhage.

George Woodruff Williams ● Trenton, N. J.; Georgetown University School of Medicine, Washington, D. C., 1917; a member of the state board of medical examiners from July 1939 to February 1942; fellow of the American College of Surgeons; visiting surgeon at the state prison; served as a lieutenant in the U. S. Navy during World War I; surgeon on the staff and director of the intern committee of St. Francis Hospital; aged 50; died, June 20, in the Graduate Hospital of the University of Pennsylvania, Philadelphia, of a brain tumor.

Benjamin F. Akin, Jackson, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1899; member of the Medical Association of Georgia; secretary and past president of the Butts County Medical Society; on the staff of the R. F. Strickland and Son Memorial Hospital, Griffin; aged 73; died, June 12, of heart disease.

Elmer David Augspurger ● Lodi, Calif.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1907; served on the staffs of the Buchanan and Mason hospitals; aged 62; died, June 25, in San Francisco of acute catarrhal jaundice.

Frederick T. Avery, Palos Park, Ill.; Northwestern University Medical School, Chicago, 1894; aged 74; died, June 19, in the Englewood Hospital, Chicago, of hypertension, heart disease and pulmonary edema.

James T. Baker, Huntington, W. Va.; University of Virginia Department of Medicine, Charlottesville, 1901; aged 74; died, July 19, of coronary thrombosis.

Robert O. Ball, Tacoma, Wash.; Eclectic Medical Institute, Cincinnati, 1893; aged 75; died, June 18, of pernicious anemia.

Marion Thomas Beaman, Eva, Okla. (licensed in Oklahoma in 1932); aged 81; died, June 6, of chronic nephritis.

Axel P. Bergman ● New Haven, Conn.; University of the City of New York Medical Department, New York, 1895; member of the American Roentgen Ray Society; aged 74; radiologist to the Hospital of St. Raphael, where he died, June 18, of carcinoma of the stomach.

William Troy Bivings Jr. ● Atlanta, Ga.; Cornell University Medical College, New York, 1932; member of the staffs of St. Joseph Infirmary and the Emory University Hospital; aged 36; died in the New York Hospital, June 15, of anterior mediastinal mesothelioma with metastases.

Joseph L. Boehm ● New York; Missouri Medical College, St. Louis, 1899; adjunct professor of urology at the New York Polyclinic Medical School and Hospital; at one time professor of genitourinary surgery at the St. Louis College of Physicians and Surgeons; member of the American Urological Association; fellow of the American College of Surgeons; on the staff of the Bellevue Hospital; aged 66; died, June 29, of heart disease.

Frank Bernard Broderick, Detroit; Detroit Homeopathic College, 1904; veteran of the Spanish-American War and World War I; formerly member of the city council, coroner of Wayne County and city physician; served on the staff of the Grace Hospital; aged 63; died, June 17, in the Veterans Administration Facility, Dearborn, Mich., of myocardosis.

Arthur Eugene Brown, Greenville, Pa.; Western Reserve University Medical Department, Cleveland, 1902; member of the Medical Society of the State of Pennsylvania; served during World War I; aged 66; on the staff of the Greenville Hospital, where he died, June 10, of cardiorenal disease.

Frank Reitz Buchanan, Canton, Okla.; Chicago College of Medicine and Surgery, 1914; medical examiner for the local draft board; aged 51; died, June 4, of coronary occlusion.

Thomas Dickinson Burgess ● Williamson, W. Va.; University of Maryland School of Medicine, Baltimore, 1892; aged 73; died, June 24, of heart disease.

Edward Ward Burns, Honesdale, Pa.; College of Physicians and Surgeons, New York, 1894; member of the Medical Society of the State of Pennsylvania; for many years a member of the school board of Honesdale; served as medical examiner for several insurance companies; surgeon for the Erie Railroad for thirty years; aged 71; died, June 21, in the Wayne Memorial Hospital of a streptococcic infection.

Charles James Carey, Towson, Md.; College of Physicians and Surgeons, Baltimore, 1897; for many years superintendent of the Eastern Shore State Hospital, Cambridge; aged 72; died, June 24.

John B. Corsiglia, Brooklyn; Long Island College Hospital, Brooklyn, 1897; aged 72; died, June 11, of heart disease.

Edgar Eugene DeLa Perriere, Winder, Ga.; Chattanooga (Tenn.) Medical College, 1909; also a druggist; aged 58; died, June 8, in St. Mary's Hospital, Athens, of uremia.

Marie Adelheid Dies, Buffalo; Illinois Medical College, Chicago, 1904; aged 67; died, June 7, of myocarditis.

Loyal Lindsey Dunlop ● Madrid, N. Y.; Albany Medical College, 1916; past president of St. Lawrence County Medical Society; served as coroner of St. Lawrence County; health officer for the towns of Madrid and Louisville; served during World War I; member of the staffs of the A. Barton Hepburn Hospital, Ogdensburg and the Potsdam Hospital; aged 52; died, June 14, of coronary thrombosis in Ottawa, Ont., Canada.

Edward Everett Higdon, Fredericktown, Mo.; Barnes Medical College, St. Louis, 1903; member of the Missouri State Medical Association; past president of St. Francois-Iron-Madison-Washington-Reynolds Counties Medical Society; aged 73; died in Ironton, May 28, of bronchopneumonia and hypertension.

Guy Munford Kendall, Corder, Mo.; Kansas Medical College, Medical Department of Washburn College, Topeka, 1908; aged 65; died in the Research Hospital, Kansas City, June 17, of carcinoma of the splenic flexure.

Allison Jardine Laird, Des Moines, Iowa; University of the City of New York Medical Department, 1887; aged 85; died, June 8, of myocarditis and hypertension.

Henry Elmer Laymon, Warren, Ind.; Medical College of Indiana, Indianapolis, 1897; formerly president of the First National Bank; aged 75; died, June 19.

William Leichner ● Hartford, Conn.; Baltimore Medical College, 1910; fellow of the American College of Surgeons; for many years surgeon of the city fire department; served during World War I; one of the founders, chief surgeon and head of the medical defense unit, Mount Sinai Hospital; consulting surgeon to the Hartford and St. Francis hospitals; aged 59; died suddenly, August 10, of coronary thrombosis.

Edward Austin McManus, Los Angeles; L.R.C.P., Ireland, and L.R.C.S., Ireland, 1923; on the staff of the Queen of Angels Hospital; aged 53; died, June 3, of coronary thrombosis.

Philip George Manecke, Brooklyn; University of the City of New York Medical Department, 1893; member of the Medical Society of the State of New York; aged 79; a founder and surgeon in chief of the Bethany Deaconess Hospital, where he died, June 8, of cerebral hemorrhage and hypertension.

Martin Luther Matthews, Sanford, N. C.; University of North Carolina School of Medicine, Raleigh, 1903; member of the Medical Society of the State of North Carolina; aged 68; died, June 12, in the Lee County Hospital.

Wallace Bruce Matthews, Grand Rapids, Mich.; Chicago Homeopathic Medical College, 1890; aged 81; died, June 3, in the O'Keefe Sanitarium, East Grand Rapids, of Parkinson's syndrome.

William Wilson Maxwell, Mayview, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1896; served during the Spanish-American War and World War I; aged 69; senior resident physician to the Mayview State Hospital, where he died, July 2, of coronary thrombosis.

Eben P. S. Miller, Chicago; Harvey Medical College, Chicago, 1905; member of the Illinois State Medical Society, medical examiner for the Selective Service Board number 123; served on the staffs of the Garfield Park Community and Franklin Boulevard hospitals; aged 70; died, June 16, of coronary thrombosis.

James Lyons Miller, Waukegan, Ill.; Loyola University School of Medicine, Chicago, 1916; veteran of the Spanish-American War; served on the staffs of St. John's Hospital, Fargo, N. D., the Victory Memorial and St. Therese's hospitals; at one time health officer of North Chicago; aged 71; died, June 25, of cerebral hemorrhage.

William Joseph Monaghan, Secaucus, N. J.; Medico-Chirurgical College of Philadelphia, 1896; served during World War I; formerly superintendent of the Hudson County Hospital; aged 72; died, June 26, in the Fitkin Memorial Hospital, Neptune, of myocardial failure.

Samuel Moore, Chicago; University Medical College of Kansas City, Mo., 1898; member of the Illinois State Medical Society; member of the staff of the Garfield Park Community Hospital; aged 71; died, June 15, of arteriosclerotic heart disease.

Frank Beattie Morrissey, St. Paul; University of Minnesota Medical School, Minneapolis, 1919; member of the Minnesota State Medical Association; fellow of the American College of Physicians; specialist certified by the American Board of Internal Medicine; served during World War I and as a major in the Minnesota National Guard; on the staff of St. John's Hospital; aged 51; from 1920 to 1933 a member of the staff of the Veterans Administration Facility, Minneapolis, where he died, June 16, of cirrhosis of the liver.

William A. J. Mosley, Thomasville, Ga.; Meharry Medical College, Nashville, Tenn., 1895; aged 71; died, June 24, of cerebral hemorrhage.

Otto Louis Mulot, Brooklyn; University of the City of New York Medical Department, New York, 1889; served during World War I; aged 75; for many years on the staff of the Brooklyn Hospital, where he died, June 22, of acute yellow atrophy of the liver.

James J. Murphy, Annapolis, Md.; University of Maryland School of Medicine, Baltimore, 1896; served as health officer and jail physician; medical examiner for the draft board during World War I and recently chairman of the examining physicians of the local Selective Service Board; aged 68; on the staff of the Emergency Hospital, where he died, June 26, of diabetes mellitus and carcinoma.

Joseph Francis Nagle ● Youngstown, Ohio; Georgetown University School of Medicine, Washington, D. C., 1919; surgeon for the Pennsylvania Railroad; aged 48; member of the staff of St. Elizabeth's Hospital, where he died, June 13, of coronary thrombosis.

Vivian John Neale ● Chicago; Bennett Medical College, Chicago, 1915; on the staff of St. Bernard's Hospital; aged 50; died, June 28, of cerebral hemorrhage.

Edward Lewis Neff, Pittsburgh; Western Pennsylvania Medical College, Pittsburgh, 1891; member of the Medical Society of the State of Pennsylvania; aged 84; died, June 15, of intestinal obstruction.

Dorothy Nina Agee Rich, Lava Hot Springs, Idaho; University of Tennessee College of Medicine, Memphis, 1920; member of the Idaho State Medical Association; aged 45; died, June 5, of pneumonia.

Frederick W. Rich, Charlotte Hall, Md.; Chicago Homeopathic Medical College, 1889; the Hahnemann Medical College and Hospital, Chicago, 1905; served on the staff of the Washington County Hospital, Hagerstown; aged 84; died, June 3, in the Relay Sanitarium of chronic myocarditis.

Francis Leslie Richardson, Weiser, Idaho; Chicago Medical School, 1925; aged 52; died, June 22, in the Veterans Administration Facility, Boise, of heart disease.

Carroll Bancroft Rugh, New Alexandria, Pa.; Jefferson Medical College of Philadelphia, 1885; member of the Medical Society of the State of Pennsylvania; bank president; aged 82; died, June 11, in the Westmoreland Hospital, Greensburg, as the result of an injury received in a fall.

Walter Burns Ryder, Long Beach, Calif.; Chicago Homeopathic Medical College, 1899; aged 75; died, June 4, of cerebral sclerosis and acute cardiac dilatation.

Mark Page Stanley, Northboro, Mass.; Baltimore Medical College, 1895; aged 69; died, June 10, in the Memorial Hospital, Worcester, of coronary thrombosis.

Herbert P. Wilson ● Wynne Wood, Okla.; Vanderbilt University School of Medicine, Nashville, Tenn., 1893; an Affiliate Fellow of the American Medical Association; the first councilor of the Seventh District of the Oklahoma State Medical Association; at one time physician in charge of the Wynnewood Sanitarium; aged 85; died, May 1, of cerebral sclerosis.

DIED WHILE IN MILITARY SERVICE

Allen Ashton Altman, Berkeley, Calif.; Stanford University School of Medicine, San Francisco, 1939; member of the California Medical Association; began active duty as a lieutenant, junior grade, in the U. S. Naval Reserve, Sept. 7, 1942; aged 28; was accidentally shot and killed in the North Pacific area, April 11.

George Howes Ketler ● Menands, N. Y.; University of Buffalo School of Medicine, 1934; assistant in medicine at the Albany Medical College from 1937 to 1939 and later an instructor in medicine; served on the staffs of the Albany and Memorial hospitals, Albany; began active duty as a captain in the medical reserve corps of the U. S. Army in October 1940; a flight surgeon in the Army Air Corps; aged 32; was killed, July 21, in an airplane crash in the Latin American area.

Ben Robbins, Pittsburgh; University of Tennessee College of Medicine, Memphis, 1937; began active duty as a first lieutenant in October 1940 and later was commissioned a captain in the medical reserve corps of the U. S. Army; a flight surgeon attached to the Air Corps; aged 30; died, June 5, of a fractured skull in the North African area (non-battle casualty).

Samuel W. Wein ● New York; Long Island College Hospital, Brooklyn, 1925; fellow of the American College of Surgeons; served on the staffs of the Lebanon and Jewish Memorial hospitals; began active duty as a captain in the medical corps, Army of the United States, Sept. 9, 1942; aged 42; died in Camp Campbell, Ky., July 20, of coronary thrombosis.

Bureau of Investigation

SOME MISCELLANEOUS MEDICAL FRAUDS

A Variety of Schemes Debarred from the Mails

Fraud orders issued by the Post Office Department have frequently been the subject of extensive articles by the Bureau of Investigation in these pages of THE JOURNAL. Following are brief abstracts of some fraud orders not dealt with previously:

Brown Remedies Company.—Under this name and the names J. A. Brown, "Dr. Brown" and "J. A. B.," one J. A. Brown, a farmer living on a rural route outside the town of Bremond, Texas, conducted a mail order scheme for about fifteen years, selling various products that he termed "botanicals" for the treatment of different diseases. A complaint to the Post Office Department from a dissatisfied customer caused that agency to investigate Brown's enterprise. An inspector for the department entered into a test correspondence with Brown to learn how he did business. An inquiry was addressed to "Dr. Brown" stating that the writer had diabetes, was on a diet, and wondered what Brown could do for him. Brown replied that the treatment for this case would cost $8.40. At another time he intimated to the same inquirer that the latter had cancer but could be cured by Brown's "botanicals" for $28.50. On the receipt of some money, Brown sent his "patient" a shipment containing small packages of herbs. Two chemists in the employ of the government reported that their examinations showed the treatment to consist of four packages containing, respectively, gentian, dandelion root, dried flower of red clover and ground root of burdock. In December 1942 the Post Office Department notified Brown to show cause on Jan. 4, 1943, at its Washington office, why a fraud order should not be issued against him and the various names under which he operated. Brown replied in a series of three letters but did not appear at the hearing or send any counsel to represent him. The government offered as its witness at the hearing Dr. Fred W. Norris, Senior Medical Officer of the Food and Drug Administration, Federal Security Agency, as one well qualified to give expert medical testimony. Dr. Norris testified that the selection of a proper mode of treatment required in a particular case necessarily was based on an accurate diagnosis, a process which in itself necessitates physical examination by a competent practitioner, involving use of the hands of the examiner and often the utilization of instruments, x-rays, blood tests and other laboratory procedures. He showed that a reading of the list or description of symptoms set forth in the cited letters addressed to Brown would not enable any one to determine just what specific disease entities were present, and without such determination it would be impossible to prescribe proper treatment. Dr. Norris testified further that he was familiar with the herbs comprising the "treatment" and that the total effect of these preparations would be approximately the equivalent of that obtained from the drinking of a cup of hot water together with use of a mild appetizer. He showed further that dandelion, red clover and burdock are rapidly being discarded by medical science and no longer appear in the United States Pharmacopeia, whereas gentian has no recognized specific value in the treatment of any known disease entity and acts merely as a bitter or stomachic. Also, he said, the dietary advice prescribed under the circumstances mentioned "would be worse than useless" and in the case of a person suffering from many ulcerated or inflammatory conditions of the gastrointestinal tract it would be harmful. Brown's letter in answer to the memorandum of charges stated that he sold botanicals by mail but denied that he made any claim "as to the curative effects of any roots or herbs." The evidence definitely established, however, that Brown was representing through the mails that he could effectively treat various diseases with the herbs that he sold, and consequently the findings were that he was attempting to obtain remittances of money through the mails by means of false and fraudulent pretenses, representations and promises. A fraud order closing the use of the mails to the names J. A. Brown, Brown Remedies Company, Dr. Brown and J. A. B. was issued by the Post Office Department on Feb. 6, 1943.

L. H. Forte.—From Hattiesburg, Miss., this person conducted a medical business by mail, representing that he could cure whatever ailed a customer. Though Forte put the title "Dr." before his name, no evidence could be found in the exhaustive biographic files of the American Medical Association to show that he ever attended a medical school or was licensed to practice medicine in any state. It was, in fact, his unwarranted selling of alleged cures, accompanied by medical advice, that led to the investigation of his scheme by the Post Office Department. A letter sent to him, asking whether he had any medicine that would cure diabetes, brought the reply that he could cure the writer and restore her to "perfect health" with a treatment for which he asked $12.50. On appeal from the inquirer he reduced the price to $5, which amount was sent him. In return, Forte mailed the customer a liquid consisting essentially of oil of citronella, and a package composed of 40 per cent of epsom salt and 60 per cent of sulfur. With these he sent instructions for taking, and some additional advice. When the Post Office Department, after due investigation of Forte's quackery, notified him to show cause on Oct. 22, 1942, why a fraud order should not be issued to debar him from further use of the mails, he neither appeared at the hearing nor sent anyone to represent him. At that hearing Dr. Fred W. Norris, Senior Medical Officer of the Food and Drug Administration, testified that the treatment described above was utterly worthless for diabetes. Also the hearing brought out that Forte had represented through the mails that for $10 he would "guarantee" a cure with his treatment without even knowing what diseases the inquirers might have. The investigation of his business had elicited from him the statements that he had commenced the enterprise in 1935, that it consisted in selling by mail only certain "powders" and "lights," and that he did not practice medicine or sell cures. All these claims the investigation proved false. Accordingly, the Post Office Department, on Nov. 17, 1942, issued a fraud order debarring Forte from further use of the mails.

Manks' School of Natural Healing, Southern School of Natural Healing and "Dr." Sanford B. Manks.—Under these names one Sanford B. Manks, who at times used the "degrees" N.D. and D.M.K. after his name, conducted a mail order scheme from Deland, Fla., selling a correspondence course in the study of naturopathy or drugless healing. The Post Office Department charged Manks with representing that all persons who completed the course, regardless of their former education, would be legally qualified to establish offices for the practice of naturopathy or drugless healing in any of the states in the Union; that as a result of taking the course they would be fully qualified and able to diagnose accurately and prescribe for and treat any and all diseases suffered by mankind and cure such conditions as cancer, diabetes, cirrhosis of the liver, gallstones, typhoid fever, measles, mumps, chicken pox, arthritis, infantile paralysis, psoriasis, pneumonia and erysipelas. In August 1942 the Post Office Department called on Manks to show cause on Sept. 14, 1942, why a fraud order should not be issued against him and the several names under which he operated. He replied with a letter which made general denial of all the charges and submitted a number of alleged testimonial letters from various persons with whom he had had dealings. Manks, however, neither appeared at the hearing in Washington nor sent counsel to represent him. At that hearing the government introduced as exhibits various advertisements taken from magazines and other periodicals in which Manks solicited the opportunity to "become Drugless Practitioners," "Learn the Healing Science of the Ages—the Laying on of Hands," "Learn Drugless Therapeutics, Practice Naturopathy and Metaphysical Healing," and "Study the coming profession. Become a Drugless Practitioner and Metaphysician, practicing under the Chirothesian Certificate." A mass of other exhibits also was introduced, consisting of letters and typewritten statements sent by Manks through the mails in answer to inquiries. It was shown that in some of these he had represented himself as "a retired Naturopathy Practitioner, Drugless Physician, and Metaphysician, of about 45 years' practice, study, research and experimentation," "qualified to teach you the rational principles to be used in restoring the sick body to health," and as having the "degrees" of "N.D., C.E., F.S." It was shown that the Post Office inspector who had investigated this case had visited and interviewed Manks at his place of business and discovered that Manks maintained his residence and office entirely in one automobile trailer which was parked in the yard of the house in which his wife and daughter lived; that the trailer was a small ordinary type and that the interior was equipped with a bed at one end and a portable typewriter and meager office equipment at the other end. It contained no scientific equipment such as one would expect to find in a medical school. Manks told the inspector that he had once engaged in the cleaning and laundry business at Portland, Maine, and moved to Deland, Fla., in 1939. What he was selling through the mails was, he declared, "the vast amount of knowledge" acquired during a lifetime. He claimed to have the equivalent of a high school education but was unable to furnish the names of any institutions from which he had graduated except that he exhibited a diploma from the Blumer College of Naturopathy, Hartford, Conn., dated June 3, 1932, which school he stated was now out of existence. Manks admitted that he was not a physician or pharmacist. Dr. Fred W. Norris, Senior Medical Officer of the Food and Drug Administration, gave expert medical testimony for the government at this hearing to the effect that he had examined all of the "lectures" comprising the course of study sent out by Manks and was of the opinion that this alleged course would in no way enable a student thereof to diagnose or cure human diseases. Many of the theories set forth in these lectures, he stated, contradicted other theories expressed in the same course. Further, he testified that a person taking such a course would not be qualified to pass or even to take any examination required by law in any of the states of the Union before the issuance of a license to practice any medical profession concerning the treatment of human diseases. Since the testimony in the case was considered sufficient to show that Manks's scheme constituted a fraud on the public, it was debarred from the mails on Nov. 13, 1942.

Tesano Tea Company, Inc.—This New York concern, whose manager was an Elmer H. Baden, sold through the mails a nostrum known as "Tesano Tea" and represented, in advertisements placed in various periodicals and through written and printed matter sent through the mails, that if taken as directed it would control diabetes, reduce the sugar content of blood and urine, restore the diabetic person to a more normal condition and relieve the symptoms of diabetes without the use of insulin or dietary measures. A microscopic examination made by a microanalyst in the employ of the Food and Drug Administration at Washington showed that Tesano Tea was a coarsely ground mixture of chamomile flowers, juniper berries, anise seed, caraway seed, fennel seed, senna leaves, equisetum stems, mint leaves, mallow flowers, strawberry leaves, and a substance closely resembling bilberry (the common European form of huckleberry). A chemist for the Food and Drug Administration made a chemical analysis of the tea brewed from this mixture according to the directions and reported that the mineral matter found in the water soluble portion amounted to 1.43 sodium and potassium salts, 0.05 iron, 0.07 calcium, 0.15 sulfate and minute traces of other minerals found in herbs soluble in water, together with tannin from barks and chlorophyl from the leaves of these herbs. In August 1942 the Post Office Department ordered the Tesano concern to show cause at a hearing to be held on August 28 why it should not be debarred from the use of the mails for perpetrating a fraud on the public in the sale of this tea. After various postponements the hearing was finally held on October 1, and the Post Office at that time introduced all of its evidence. In addition to the evidence on the composition, mentioned above, expert

medical testimony for the government was given by Dr. Maurice Protas, a physician well qualified by education and experience to give such testimony. He stated that he had made a special study of diabetes, had treated several thousand sufferers from that disease and testified that the use of the Tesano Tea, according to the composition as shown by the analyses reported, would have no beneficial effect on a diabetic condition, would not reduce the sugar content of the blood or urine or in any way alleviate the symptoms of the malady or restore a diabetic person to a normal condition. Further, he testified that should such a person use this tea and relax his dietary precautions or discontinue the use of insulin (if taking it) in the belief that Tesano Tea would permit of such discontinuance and relaxation, he might grow progressively worse, go into a diabetic coma and die. The Tesano company was represented at the hearing by its attorney, who requested additional time within which to present expert medical testimony. The respondents were given until October 8 to introduce such testimony and thereafter the time was extended until November 23, at their request. However, there was received from the attorney for the respondents a letter dated Nov. 20, 1942, in which he stated that after consultation with his client company, the latter, as the result of a medical opinion they had received concerning their product, had decided to discontinue the sale of Tesano Tea and to return all remittances received to the senders, besides shipping all herbs on hand back to the concern from which they had been purchased. Further the Tesano people offered to dispose of their fixed assets so that the corporation would either be dissolved or considered abandoned. Despite these representations, the Post Office Department felt that the defendant concern or its successors or assigns might at some time decide to resume their fraudulent enterprise and to prevent this, a fraud order debarring the scheme from the mails was issued on Dec. 14, 1942, against the Tesano Tea Company, Inc.

CEASE AND DESIST ORDERS

Abstracts of Certain Federal Trade Commission Releases

The work of the Federal Trade Commission, in helping to protect the public against misrepresentation or fraud in the medical as well as other fields, has been greatly extended by the provisions of the Wheeler-Lea Amendment to the Federal Trade Commission Act. The Food, Drug and Cosmetic Act of 1938 added to the Food and Drug Administration's control of the advertising claims and statements made on the label of a medicine or on the carton or in the accompanying leaflet, whereas what might be termed collateral advertising, that which appears in circulars, newspapers and magazines and over the air, comes more actively under the purview of the Federal Trade Commission by virtue of the Wheeler-Lea Amendment.

THE JOURNAL has at various times commented on the activities of the Federal Trade Commission in this connection, even before the Wheeler-Lea Amendment gave it its added rights. In some cases the Commission may accept from the person or concern involved a stipulation that the objectionable practices or claims cited will be discontinued. In other cases the Commission issues what is known as a Cease and Desist Order, in which the individual, manufacturer or distributor cited is ordered to cease and desist from practices which have been declared objectionable. In some cases the claims cited have been discontinued by the firms several months (or even longer) before the issuance of the order. Abstracts of some of the orders issued in 1942 follow in this form: name of product, name of distributor, date of issuance of complaint, date of issuance of Cease and Desist Order and terms of order.

Bee-Dew Cosmetics.—Vivian S. Nash, trading as Bee-Dew Cosmetic Company, Detroit; complaint issued Aug. 18, 1942; order issued Oct. 30, 1942. Order directed the respondent to discontinue any advertising which represented that "Bee-Dew Special Hair Grower," "Bee-Dew U-Gro," "Bee-Dew Special U-Grow," "Bee-Dew Scalp Oil," "Bee-Dew Shampoo" and "Bee-Dew Pressing Oil" promote the growth of new hair or constitute a cure or remedy for, or possess any value in the treatment of, falling hair, baldness, dull hair, scalp irritation or dandruff, beyond cleansing the hair and scalp, allaying itching due to minor scalp irritations and facilitating the removal of loose dandruff scales; or any advertisement which uses the word "grow" or "grower" or any term similar to these in phonetics or spelling to describe the preparations designated, Bee-Dew Special Hair Grower, Bee-Dew Special U-Gro and Bee-Dew U-Gro, or which otherwise represents that any such product has any effect on the growth of the hair. The respondent was ordered further to discontinue any advertisement which represents that her product "Bee-Dew O-No" will give complete protection from offensive body odor or have any effect thereon in excess of affording temporary protection from such odors.

Chinese Herbs.—Edwin Tom, trading as Master Herb Company, Los Angeles; complaint issued April 21, 1942; order issued Oct. 24, 1942. Order prohibited any advertisement representing that these herbs constitute a cure or remedy for rheumatism, arthritis or asthma or possess any value in treating such conditions in excess of giving temporary relief from the symptoms of pain associated with rheumatism and arthritis and temporary relief from the paroxysms of asthma; or any advertisement representing that such herbs possess therapeutic value in treating any other diseases or ailments beyond affording temporary palliative relief from some of the pains or other symptoms that accompany them. Also prohibited were the representations that the herbs in question are a cure or remedy for, or have any value in the treatment of, stomach ulcers or that their use will renew the glands of the body or enable the user to regain strength or vigor.

Di-Function.—Di-Function Company, Inc., Fort Worth, Texas; complaint issued Jan. 13, 1942; order issued Nov. 6, 1942. Order prohibited further advertising misrepresentations that the product is a cure or effective treatment for sugar diabetes, will revive the glands of the pancreas or enable them to produce sufficient insulin for the body's needs or enable a victim of sugar diabetes to discontinue dieting and the use of medicines with safety.

Double-Vitamin Cold Cream and Skin Softening Cream (formerly called Ward's Tissue Cream).—Montgomery Ward and Company, Chicago; complaint issued March 31, 1942; order issued October 16, 1942. Order prohibited the concern from further representing that any of its cosmetic preparations containing vitamins A and D have therapeutic value when applied to the skin, or any effect on the appearance of the skin beyond the emollient, soothing and cleansing action of ordinary cosmetic cream mixtures; that the presence of vitamins A and D in these products gives them special properties over and above those of ordinary cosmetic creams or that the use of such toiletries, because of their vitamin content, will have any beneficial effect in keeping the facial skin firm and smooth or the hands soft, smooth and white or in promoting growing skin or retarding the appearance of age. The Ward concern also was prohibited from further use of the words "tissue cream" or similar terms to describe any cosmetic preparation or from representing in any way that its creams have therapeutic value in treating or nourishing the skin tissues.

Electro-Health Short Wave Diathermy.—Electro-Health Appliance Company, Los Angeles; complaint issued June 12, 1941; order issued Nov. 10, 1942. Order directed the concern to discontinue any advertisement which represented that the device is harmless and constitutes a competent treatment for the various ailments mentioned in the advertising, or any other disorder, unless specifically limited to cases in which no acute inflammatory process is involved and in which the application of heat is not likely to induce hemorrhage; or any advertisement which fails to reveal clearly, conspicuously and unequivocally that the device is unsafe to use unless a competent medical authority has determined, as a result of diagnosis, that the use of diathermy is indicated, and has prescribed the method of such treatment and the user has been thoroughly instructed by a physician or trained technician in the use of the device.

Hollywood Magic Garment.—Hollywood Magic Garment Company, Los Angeles; complaint issued Feb. 11, 1942; order issued Jan. 26, 1943. Order prohibited dissemination of any advertising which represented that this device constitutes an effective method for the removal of excess flesh or weight or that it is in all cases safe to use. This order was based on the findings of the Commission that the garment in question, made of rubberized cloth which fits tightly about the neck, wrists and ankles, induces perspiration and thus causes the body to lose substantial quantities of water, salt, and consequently weight. The findings continue, however, that the effect is only temporary, since the wearer of the garment, because of thirst produced by the amount of water lost, must proceed almost immediately to drink a quantity of water or other liquid with the result that the weight of the body becomes about the same as it was before the process was begun. The Commission also found "that the device cannot be properly regarded as safe in all cases as its use may raise body temperature to such a point that heat exhaustion will follow and it should never be used in the presence of any serious pathological condition when the debilitating effect of the loss of fluid and salt from the body would be distinctly detrimental."

Possor Shortwavatherm.—Physicians Electric Service Corporation, manufacturer, Solomon E. Mendelsohn, officer, and the May Department Store Company, sales agent, all of Los Angeles; complaint issued Jan. 31, 1942; order issued Oct. 27, 1942. Order prohibited further use of misrepresentations in the advertising of the product in question, a short-wave diathermic device, as follows: that the thing resulted from years of diligent engineering research and incorporated "safety features"; that physicians prescribe and recommend short-wave diathermy in many ailments (of which more than 40 were named in the advertising); that even the unskilled lay public can use this device in the treatment of self diagnosed diseases and ailments by individual self application in the home and that it will prove a scientific, harmless and effective method of relieving or curing arthritis, sinus infection, lumbago and other conditions.

SHL (Suffer No Longer).—Cora Lee Wiley, Adel, Ga.; Complaint issued Dec. 22, 1940; order issued Nov. 6, 1942. Order prohibited further advertising misrepresentations that this product constitutes a cure or remedy for, or possesses any value in the treatment of, gonorrhea or any disease or disorder of the female organs.

VBev.—Purity Products, Inc., distributor, Newark, N. J., The Journal of Living Publishing Corporation, advertiser, and Victor H. Lindlahr, editor, the latter two of New York; complaint issued Feb. 10, 1940; order issued Feb. 12, 1943. Order prohibited the respondents from further disseminating any advertisement which represented that "VBev" has any value in the treatment of arthritis, nervousness, indigestion, sleeplessness, lack of energy, underweight or general run-down condition, or of any disease or condition caused by or associated with a vitamin B_1 deficiency. Respondents were further ordered to cease representing that the product will beneficially affect any manifestation of vitamin B_1 or vitamin G deficiency or the assimilation or absorption of food to increase weight or that it is anything more than a food supplement capable of supplying certain vitamins which can be obtained from ordinary foods.

Correspondence

GRANULOCYTOPENIA AFTER USE OF SUCCINYLSULFATHIAZOLE

To the Editor:—I am much interested in an article which appeared in THE JOURNAL, July 3, reporting the death of a patient alleged to be due to acute agranulocytosis due to the administration of succinylsulfathiazole. I feel that it is highly important that all toxic manifestations, especially the more serious ones such as acute agranulocytosis following the administration of the sulfonamides, be given special consideration. I do not, however, feel it at all desirable that questionable occurrences of drug sensitivity should be reported dogmatically as being due to the sulfonamides. In this report it appears that the patient was probably sensitive to sulfathiazole, and I should like to refer to one such observation which I reported in a paper entitled "Succinylsulfathiazole: An Adjuvant in the Surgery of the Large Bowel" (THE JOURNAL, Sept. 26, 1942, p. 265). Under the subtitle "Toxicity of Succinylsulfathiazole" an instance was reported of a moderately severe reaction to succinylsulfathiazole. The patient was subsequently shown to be highly sensitive to sulfathiazole, and it was emphasized that any patient receiving succinylsulfathiazole should be under close observation.

I do not agree fully with the conclusions of the article. Unfortunately, mention was not made as to whether or not this patient had been on a restricted diet, although reference was made to an article by Spicer, Daft, Sebrell and Ashburn, "Prevention and Treatment of Agranulocytosis and Leukopenia in Rats Given Sulfanilylguanidine or Succinylsulfathiazole in Purified Diets" (*Pub. Health Rep.* **57**:1559 [Oct. 16] 1942), involving observations made on animals on highly restricted, purified diets. Also, unfortunately, the author has not given any data as to the white cell count on the February 9 admission, although the statement is made that "repeated blood counts revealed rapidly developing acute agranulocytosis" and the question is raised as to whether all of these counts were done after the patient had developed a sore throat. I am fully aware of the possibility that a sensitive individual may react to a relatively small quantity of drug; however, I am not aware of any instance in which acute agranulocytosis has developed in the patient when the quantity of drug in the blood was so low that it could not be detected by the usual quantitative colorimetric procedure. It is not my purpose to detract from a proper report showing the toxicity of succinylsulfathiazole, but I cannot agree that this is a proved case of acute agranulocytosis due to the administration of succinylsulfathiazole, and I am unable to find in the literature any support for the following concluding statement: "Sensitivity has been shown to be present not only when there has been an interruption in the course of medication but also when there has been a prolonged administration of large doses of the drug." I am unable to find where succinylsulfathiazole was referred to in any of the references given. In fact, the original publication announcing succinylsulfathiazole was not written until 1941 (Poth, E. J., and Knotts, F. L.: *Proc. Soc. Exper. Biol. & Med.* **46**:129 [Oct.] 1941).

EDGAR J. POTH, PH.D., M.D., Galveston, Texas.
Professor of Surgery, University
of Texas Medical Branch.

[NOTE.—This letter was referred to Dr. S. A. M. Johnson, who replies:]

To the Editor:—The subject matter of the article entitled "Succinylsulfathiazole: An Adjuvant in the Surgery of the Large Bowel" is familiar to me. The toxic reactions of succinylsulfathiazole are undoubtedly due to sulfathiazole, a product of its hydrolysis. Therefore in any sulfonamide hypersensitive individual receiving succinylsulfathiazole reactions peculiar to sulfathiazole are to be anticipated.

In referring to the article by Spicer, Daft, Sebrell and Ashburn, "Prevention and Treatment of Agranulocytosis and Leukopenia in Rats Given Sulfanilylguanidine and Succinylsulfathiazole in Purified Diets," I applied the treatment used for the experimental agranulocytosis and did not mean to emphasize the part that diet played in its production. Incidentally, my patient was on a regular hospital diet until he became too ill to eat.

The results of the blood examinations, which were on a chart that was deleted from the original paper, were: Feb. 13, 1943, white blood cells 8,500 with a differential count of polymorphonuclears 65 per cent, basophils 1 per cent, small lymphocytes 22 per cent and mononuclears 7 per cent; February 16, white blood cells 7,200; February 26, white blood cells 7,000 and March 1, white blood cells 1,400 with a differential count of polymorphonuclears 30 per cent, small lymphocytes 62 per cent and mononuclears 8 per cent. On the morning of March 2 the white blood cell count was 1,200 with a differential count of small lymphocytes 90 per cent and mononuclears 10 per cent. In the afternoon the white blood cell count was 500. On the morning of March 3 the white blood cell count was 500. In the evening of March 3 the white blood cell count was 200 with a differential count of small lymphocytes 14 per cent and large lymphocytes 86 per cent. The first blood examination which showed a drop in white blood cell count and in polymorphonuclear count was taken on the morning the patient first experienced a sore throat.

A sternal puncture examination was done on March 3. This also was deleted from the original paper. It revealed a marrow which was moderately cellular. There was a complete absence of myelocytes with fairly numerous myeloblasts showing no evidence of maturation. There were numerous megalocytes, many phagocytic endothelial cells and occasional plasma cells. The development of granulocytes was stopped at the primitive blast and myeloblast stages.

In a hypersensitive individual toxic reactions may manifest themselves with the administration of almost minute quantities of a drug. These reactions at the same time are not dependent on the blood concentration. Levin and Bethell in their report "Fatal Granulopenia Developing During the Administration of Sulfadiazine" (*Univ. Hosp. Bull., Ann Arbor* **8**:30 [April] 1942) stated that the blood concentration of the sulfonamide derivatives gives no indication of the likelihood of ensuing granulocytopenia. Likewise Rinkoff and Spring in their article "Toxic Depression of the Myeloid Elements Following Therapy with the Sulfonamides" (*Ann. Int. Med.* **15**:89 [July] 1941) stated that the dosage of the drug, not the blood concentration, is probably the factor that determines whether a toxic manifestation could occur in a susceptible individual. Also Lyons and Balberor in their article "Febrile Reactions Accompanying the Readministration of Sulfathiazole" (THE JOURNAL, March 21, 1942, p. 955) state that it is possible to produce such a high degree of hypersensitivity to the drug that a very small dose may elicit a febrile response.

The sentence "Sensitivity has been shown to be present not only where there has been an interruption in the course of medication but also where there has been prolonged administration of large doses of the drug" did not refer entirely to succinylsulfathiazole per se but to the sulfonamides in general and to sulfathiazole in particular. I wish to reemphasize that succinylsulfathiazole most likely owes its toxicity to sulfathiazole, a product of its hydrolysis. The following statements taken from various papers are of interest. Rinkoff and Spring,

in discussing the toxicity of the sulfonamides (Toxic Depression of the Myeloid Elements Following Therapy with the Sulfonamides, *Ann. Int. Med.* **15**:89 [July] 1941), state that although a small dose may cause a leukopenia or fatal agranulocytosis these toxic effects on the bone marrow usually manifest themselves after prolonged use, especially in the instances in which the disease itself has a deleterious effect on the hemopoietic system. Hayne and Larimore (Sulfathiazole as a Cause of Death, THE JOURNAL, Oct. 18, 1941, p. 1353) said that their patient was the first example as far as they knew of an apparently well person in whom acute agranulocytosis developed after prolonged medication with sulfathiazole, during which time no other drug was used. Lee Thompson (Agranulocytosis Due to Sulfathiazole, *Northwest Med.* **41**:133 [April] 1942) commented in his case of agranulocytosis due to sulfathiazole that interruption of administration seems to be the most important factor in fatal cases. Levin and Bethell (Fatal Granulocytopenia Developing During the Administration of Sulfadiazine, *Univ. Hosp. Bull., Ann Arbor* **8**:30 [April] 1942) in speaking of sulfonamide derivatives stated that granulocytopenia usually develops after prolonged or interval use of such drugs. Long, Haviland, Edwards and Bliss (The Toxic Manifestations of Sulfanilamide and Its Derivatives, THE JOURNAL, Aug. 3, 1940, p. 364) found that patients who have a toxic reaction caused by one of these drugs may have a similar reaction when another member of the sulfonamide group is prescribed. Lyons and Balberor (Febrile Reactions Accompanying the Readministration of Sulfathiazole, *ibid.*, March 21, 1942, p. 955) stated that it is well known that antigenic agents may often be administered continuously without any deleterious consequence, but, if an interval is interposed between courses of the antigen, hypersensitive reactions are apt to occur.

STURE A. M. JOHNSON, M.D., Ann Arbor, Mich.

USE OF LIVER TO OVERCOME TOXICITY OF SULFONAMIDES

To the Editor:—This communication is prompted by the Current Comment in the July 17 issue of THE JOURNAL, page 812. It concerns the remarkable findings by Chamelin and Funk that injections of whole liver reduced the toxicity of sulfanilamide and diethylstilbestrol in rats.

Certain experiments that I have done lead me to believe that the action of whole liver extract in ameliorating the toxic effects against both of these substances is through its high content of ascorbic acid. It has long been known that liver, next to the adrenal glands, contains more ascorbic acid than all other animal tissues (Aron, H., and others: *Jahrb. f. Kinderh.* **1**:123, 1921).

The effect of ascorbic acid in reducing the toxic effects of neoarsphenamine is also well known (Sulzberger, M. B., and Oser, B. L.: *Proc. Soc. Exper. Biol. & Med.* **33**:716, 1934). Recently I was able to reduce the sensitivity of a patient to large doses of salicylates by the concurrent administration of vitamin C (*J. Lab. & Clin. Med.* **28**:28 [Oct.] 1942). Others and myself have been able to reduce the toxicity of the sulfonamides by concomitant administration of vitamin C in large doses (Pelner, Louis: *New York State J. Med.*, to be published).

Recently also I was able to give to 3 patients effective doses of diethylstilbestrol, even though they were previously remarkably sensitive to exhibition of this drug. This was done by giving a preliminary intravenous injection of ascorbic acid (100 mg.) and giving 100 mg. of ascorbic acid by mouth with each tablet of diethylstilbestrol. This was reported in a lecture on vitamins in a postgraduate course in gastroenterology (May 17, 1943 at the Greenpoint Hospital). This lecture is to be published in the *American Journal of Digestive Diseases.*

How vitamin C improved the tolerance to certain chemical drugs is unknown. One author (Vauthey, M.: *Prat. méd. franç.* **18**:107 [March] 1937) is of the opinion that vitamin C acts by assuring the vitality and proper functioning of the liver cells.

LOUIS PELNER, M.D., Brooklyn.

"QUINACRINE-CALCIUM THERAPY OF TYPHUS"

To the Editor:—In your editorial comment "The Quinacrine-Calcium Therapy of Typhus" in the July 24 issue the work of Dr. van Meerendonk is described with a closing remark that opinion about it cannot be ventured until further experiences are reported.

Permit me to call your attention to an article on "The Use of Atabrine in Two Cases of Typhus Fever," published in the April 1943 issue of the *Medical Bulletin of the Veterans' Administration.* While the German investigator's work antedates mine, no mention of it was made in a medical publication of any United Nation until an abstract of this treatment appeared in the October 1942 issue of the *Tropical Diseases Bulletin* (London) and so recorded by the *Quarterly Cumulative Index Medicus.*

As seen from the report of the 2 cases of typhus in the *Medical Bulletin of the Veterans' Administration,* no knowledge of Dr. van Meerendonk's work could have been available when the effects of the drug on typhus were first noted at this hospital. While no priority for the use of atabrine in treatment of typhus can be claimed by the undersigned, I respectfully submit my article published in the *Medical Bulletin of the Veterans' Administration* as evidence of an independent discovery of the use of atabrine in the treatment of typhus.

It may be added that a report of 2 more typhus cases, apparently successfully treated with atabrine, has been submitted for publication to the *Medical Bulletin of the Veterans' Administration.*

HAROLD FREED, M.D.,
Veterans Administration Hospital,
Dallas 2, Texas.

DUSTING POWDER FOR RUBBER GLOVES

To the Editor:—In the issue of April 17 you kindly published a note from me, recommending starch as a substitute for talcum as a dusting powder for gloves. At the time that letter was written there was reason to believe that we (M. G. Seelig, D. J. Verda and F. H. Kidd) had overcome the undesirable gelatinization property of starch. We were in error and therefore were obliged to institute a new search. We have now found that potassium bitartrate is a completely satisfactory substitute for talc. The potassium bitartrate, in addition to being free from all the undesirable and dangerous properties of talc, possesses the highly desirable property of being bacteriostatic. Several of our leading St. Louis hospitals have used the potassium bitartrate with complete satisfaction and safety.

M. G. SEELIG, M.D., St. Louis.
Director of Pathology, Barnard Free
Skin and Cancer Hospital.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARDS OF MEDICAL EXAMINERS
BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL, Sept. 4, page 55.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II.* November. Sec., Dr. J. S. Rodman, 225 S. 15th St., Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Written. Part I.* Various centers, Jan. 21. Final date for filing application is Oct. 21. Sec., Dr. P. M. Wood, 745 Fifth Ave., New York 22, N. Y.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written. Part I.* Locally, Feb. 12. Final date for filing application is Nov. 15. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh, Pa.

AMERICAN BOARD OF OPHTHALMOLOGY: *Oral. Parts I and II.* Chicago, Oct. 8-9. Sec., Dr. John Green, 6830 Waterman Ave., St. Louis, Mo.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: *Written and Oral. Part II.* Chicago, Jan. 21-22. Sec., Dr. Guy A. Caldwell, 3303 Prytania St., New Orleans, Louisiana.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral.* Chicago, October. Sec., Dr. Dean M. Lierle, University Hospital, Iowa City, Iowa.

AMERICAN BOARD OF PEDIATRICS: *Written.* Locally, Feb. 4. *Oral.* Philadelphia, March 25-26, and San Francisco, May 6-7. Sec., Dr. C. A. Aldrich, 707 Fullerton Ave., Chicago.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: *Written.* Locally, Oct. 30. *Oral.* Locally, Dec. 26-21. Final date for filing application is Sept. 30. Sec., Dr. Walter Freeman, 1028 Connecticut Ave. N.W., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: February. Final date for filing application is Dec. 15. Sec., Dr. B. R. Kirklin, 102-110 Second Ave. S.W., Rochester, Minn.

AMERICAN BOARD OF UROLOGY: *Oral.* Chicago, February. *Written.* Various centers, December. Final date for filing application is Nov. 1. Sec., Dr. Gilbert J. Thomas, 1409 Willow St., Minneapolis, Minn.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Medical Practice Acts: State Law not Applicable to Practice on Grounds for Public Buildings Ceded by the State to the United States.—Lynch, who was licensed to practice medicine and surgery in Tennessee but not in Arkansas, rendered on a site of land purchased by the United States government "medical first aid work" to approximately 2,000 employees of a contractor engaged in the construction in Arkansas of a colony for Japanese evacuees. The Desha county chancery court, Aug. 19, 1942, enjoined him from practicing medicine in Arkansas without a license so to do. The next day he filed a writ of prohibition in the Supreme Court of Arkansas against the chancellor of the Desha chancery court to prevent the chancellor from proceeding further in the injunction suit. The Supreme Court issued a temporary writ of prohibition against the chancellor, which was made permanent about six weeks later. The chancellor moved for a rehearing.

The sole question here present, said the Supreme Court, is whether a physician not licensed in Arkansas, who confines his practice to workmen engaged in constructing federal buildings on property owned by the United States, is subject to the laws of Arkansas relating to the practice of medicine and surgery. Admittedly the state of Arkansas has yielded jurisdiction over the area in question by reason of section 5644, Pope's Digest, which provides, in part, as follows:

> "The state of Arkansas hereby consents to the purchase to be made or heretofore made, by the United States, of any site or ground for the erection of any armory, arsenal, fort, fortification, navy yard, customhouse, lighthouse, lock, dam, fish hatcheries, or other public buildings of any kind whatever, and the jurisdiction of this state, within and over all grounds thus purchased by the United States, within the limits of this state, is hereby ceded to the United States. . . . " Act April 29, 1903, p. 346, sec. 1."

Article 1, section 8, clause 17 of the constitution of the United States provides that Congress shall have power:

> to exercise exclusive Legislation in all Cases whatsoever, over such District (not exceeding ten Miles square) as may, by Cession of particular States, and the Acceptance of Congress, become the Seat of the Government of the United States, and to exercise like Authority over all Places purchased by the consent of the Legislature of the State in which the Same shall be, for the Erection of Forts, Magazines, Arsenals, dock-yards, and other needful buildings.

We think, continued the Supreme Court, that there can be no doubt that the buildings constructed by the government on its property to be used for the relocation of the Japanese come within the term "other public buildings of any kind whatever," as used in section 5644, supra, and under the aforementioned provisions of the United States constitution as "other needful Buildings," in this time of war stress. The Supreme Court of the United States in *Surplus Trading Company* v. *Cook*, 281 U. S. 647, 50 S. Ct. 455, held that certain blankets located within Camp Pike on land owned by the United States and lying within Pulaski County, Ark. (now known as Camp Robinson), are not subject to taxation by this state because Arkansas has surrendered and ceded its jurisdiction over the area to the United States, the court there saying:

> It long has been settled that, where lands for such a purpose are purchased by the United States with the consent of the state legislature, the jurisdiction theretofore residing in the state passes, in virtue of the constitutional provision, to the United States, thereby making the jurisdiction of the latter the sole jurisdiction.

The War Department of the United States by proclamation No. WD 1, issued Aug. 13, 1942, has designated the property in question here as a military area.

We think, continued the court, that the issue here has been decided against the chancellor's contention by this court in *Young* v. *G. L. Tarlton, Contractor, Inc.*, 162 S. W. (2d) 477. In that case it was charged that two Delaware corporations engaged in constructing military buildings for the United States at Camp Robinson were violating the laws of this state because they had failed to qualify in Arkansas as foreign corporations. This court, however, rejected that contention, saying:

> The laws of this state relative to the domestication of foreign corporations have no application for the reason that appellees were engaged in construction work for the United States at a military post under the jurisdiction of the United States.

In the case under consideration, said the Supreme Court, it is conceded that Dr. Lynch is confining his practice to the area owned by the United States, administering to the employees of the construction company, which by contract with the United States is required to keep available a physician for its employees. We think it clear, under the aforementioned authorities, that the laws affecting the practice of medicine and surgery in Arkansas do not control and cannot apply to the rights of Dr. Lynch to practice on property the jurisdiction over which has been surrendered to the United States, and the title to which has been acquired by the United States. The writ of prohibition against the chancellor preventing him from proceeding further in the original injunction suit against Dr. Lynch was affirmed. —*Lynch v. Hammock*, Chancellor, 165 S. W. (2d) 369 (Ark., 1942).

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology, Chicago, Oct. 10-13. Dr. W. L. Benedict, 102 Second Ave. S.W., Rochester, Minn., Secretary.

American Public Health Association, New York, Oct. 12-14. Dr. Reginald M. Atwater, 1790 Broadway, New York, Executive Secretary.

Association of Military Surgeons of the United States, Philadelphia, Oct. 21-23. Colonel James M. Phalen, Army Medical Museum, Washington, D. C., Secretary.

Delaware, Medical Society of, Wilmington, Oct. 12-13. Dr. W. O. La Motte, 601 Delaware Ave., Wilmington, Secretary.

District of Columbia, Medical Society of the, Washington, Sept. 30-Oct. 2. Mr. Theodore Wiprud, 1718 M St. N.W., Washington, Secretary.

Indiana State Medical Association, Indianapolis, Sept. 28-30. Mr. T. A. Hendricks, 23 East Ohio St., Indianapolis, Executive Secretary.

Inter-State Postgraduate Medical Association of North America, Chicago, Oct. 26-29. Dr. Arthur G. Sullivan, 16 North Carroll St., Madison, Wis., Managing Director.

Kansas City Southwest Clinical Society, Kansas City, Mo., Oct. 4-6. Dr. William M. Korth, 1115 Grand Ave., Kansas City, Mo., Secretary.

Kentucky State Medical Association, Louisville, Oct. 4-6. Dr. P. E. Blackerby, 620 South Third St., Louisville, Acting Secretary.

Michigan State Medical Society, Detroit, Sept. 22-24. Dr. L. Fernald Foster, 2020 Olds Tower, Lansing, Secretary.

Mississippi Valley Medical Society, Quincy, Ill., Sept. 29-30. Dr. Harold Swanberg, 510 Maine St., Quincy, Ill., Secretary.

Oklahoma City Clinical Society, Oklahoma City, Oct. 18-21. Dr. Clark H. Hall, 117 North Broadway, Oklahoma City, Secretary.

Omaha Mid-West Clinical Society, Omaha, Oct. 25-29. Dr. J. D. McCarthy, 1036 Medical Arts Bldg., Omaha, Secretary.

Pennsylvania, Medical Society of the State of, Philadelphia, Oct. 5-7. Dr. Walter F. Donaldson, 500 Penn Ave., Pittsburgh, Secretary.

Virginia, Medical Society of, Roanoke, Oct. 25-27. Miss Agnes V. Edwards, 1200 East Clay St., Richmond, Secretary.

Wisconsin, State Medical Society of, Milwaukee, Sept. 13-15. Mr. Charles H. Crownhart, 110 East Main St., Madison, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1933 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama State Medical Assn. Journal, Montgomery

12:325-380 (May) 1943

Administration of Pentothal Sodium Oxygen Anesthesia. C. N. Carraway and B. M. Carraway.—p. 325.
Hypertension as Urologic Problems. G. A. Cashman.—p. 332.
Luetagin Serum Studies of Immunologic Reactions in Normal and Syphilitic Patients: Preliminary Report. W. Marshall.—p. 335.

12:381-444 (June) 1943

Objectives in Medical Education. A. C. Furstenberg.—p. 381.
Nonspecific Urinary Tract Infections: Present Status of Treatment. J. B. Hicks.—p. 386.

American Heart Journal, St. Louis

25:573-718 (May) 1943

*Pulmonary Embolism With and Without Acute Cor Pulmonale, with Especial Reference to Electrocardiogram. D. Murnaghan, S. McGinn and P. D. White.—p. 573.
Amount of, and Changes in, Residual Blood of Heart. G. Nylin.—p. 598.
Resting Peripheral Blood Flow in Anemic State. D. I. Abramson, S. M. Fierst and K. Flachs.—p. 609.
Range of Normal Heart in Athletes. J. W. Wilce.—p. 613.
Effects of Changes in Venous Pressure on Blood Flow in Limbs. C. K. Friedland, J. S. Hunt and R. W. Wilkins.—p. 631.
Experiments with Calculated Therapeutic and Toxic Doses of Digitalis: I. Effects on Myocardial Cellular Structure. W. H. Dearing, A. R. Barnes and H. E. Essex.—p. 648.
Id.: II. Effects on Electrocardiogram. W. H. Dearing, A. R. Barnes and H. E. Essex.—p. 665.
Vasoconstrictor and Angiotonin Neutralizing Properties of Renal Venous Plasma. H. Weinstein, M. Friedman, H. L. Newman and J. Sugarman.—p. 682.
Acute Rheumatic Fever and Valvular Damage. M. G. Brown.—p. 686.

Electrocardiograms in Pulmonary Embolism.—Murnaghan and his collaborators report 10 cases of acute cor pulmonale without underlying heart disease with five deaths. The electrocardiograms corroborate the observation that there is a typical electrocardiographic pattern in acute cor pulmonale. It is characterized by right axis deviation with a prominent S wave in lead 1, a depressed ST segment in lead 2 and often in lead 1, a Q wave and an inverted T wave in lead 3 and a diphasic or an inverted T wave in lead 4-F. An upward convexity of the ST segment in lead 3 is common; an elevation of the ST take-off in this lead occurs in a few cases. The electrocardiographic changes in an additional series of 92 cases of pulmonary embolism are reviewed. Coexistent heart disease was present in 69. In 29 cases symptoms of shock predominated; in 63 signs of pulmonary infarction without shock or collapse predominated. Electrocardiographic changes indicative of acute cor pulmonale were present in 16 of the former group and in 17 of the latter. Thus the electrocardiogram gave indication of some degree of acute cor pulmonale in a little more than one half of the cases when shock predominated, in a little less than one fourth of the group without shock and in about one third of the entire series, including patients with abnormal electrocardiograms as the result of heart disease. "Pulmonary embolism" and "acute cor pulmonale" are not synonymous terms. Varying degrees of acute cor pulmonale occur, and the electrocardiogram provides a means of evaluating the status of the heart, especially when clinical signs indicative of right-sided heart strain are not obvious. Anoxemia produced by a pulmonary embolus may cause infarction in the cardiac muscle already the seat of a severe coronary artery disease. When this occurs, the electrocardiographic changes are atypical and confusing. Death is often caused by a second or third embolus. Prophylactic leg exercises, venography and ligation of the femoral vein should reduce the incidence of fatal pulmonary emboli.

American J. Digestive Diseases, Fort Wayne, Ind.

10:201-240 (June) 1943

Digestion and Nervous System: Review of Literature. J. E. Thomas.—p. 201.
Gallbladder Visualization with Beta (3,5 di-iodo-4-hydroxyphenyl) Alpha Phenyl Proprionic Acid (Priodax). I. H. Einsel and T. H. Einsel.—p. 206.
Studies on Influence of Various Substances on Colon: I. Phenolphthalein and Other Laxatives. F. Steigmann, O. Wozasek and Josephine M. Dyniewicz.—p. 208.
Tired, Weak, Exhausted, Depressed Patient. J. A. Turnbull.—p. 218.
Pseudo-Cascade Stomach: Case Report. D. C. Browne and G. McHardy.—p. 224.
Pruritus Ani. Study of Mucosal pH and Bacterial Flora. Treatment Based on These Findings. 105 Case Reports.—p. 227.

American Journal of Surgery, New York

60:309-458 (June) 1943

Surgical Operations with Navy Medical Corps in South Pacific. W. M. Johnston.—p. 313.
Intra-Abdominal Injuries. C. Di Lorenzo, M. Rothman and C. Howley.—p. 319.
Solitary Cyst of Kidney: Report of 2 Cases. L. E. McCrea.—p. 328.
Theory and Therapy of Shock: Reduced Temperatures in Shock Treatment. F. M. Allen.—p. 335.
New Operation for Repair of Crucial Ligaments of Knee. F. H. Albee.—p. 349.
Control of Acute Thrombophlebitis with Ultraviolet Blood Irradiation Therapy. G. Miley.—p. 354.
Tobacco Smoking and Cancer of Lung. E. J. Grace.—p. 361.
Value of Auscultation of Abdomen in Diagnosis of Acute Appendicitis. N. C. Stevens.—p. 365.
Experimental Osteomyelitis. L. Scheman, P. Lewin, S. Sideman and Martha Janota.—p. 371.
New Treatment for Acute Dilatation of Stomach. E. G. Joseph.—p. 381.
Dangers of Boric Acid: Its Use as Irrigant and Report of Case. C. A. Ross and J. F. Conway.—p. 386.
Continuous Caudal Anesthesia: Preliminary Report of Newly Modified Technic. A. E. Posner and I. M. Buch.—p. 396.
Caudal Anesthesia in Obstetrics. A. C. Mietus and R. M. Mitchell.—p. 399.
Avertin Anesthesia in Gynecology: Report on Series of Cases. D. B. Dorman.—p. 403.
Bacillus Proteus OX19 Agglutinated by Serum of Pregnant Women: Preliminary Report. I. Gratch.—p. 411.
Comparison of Tissue Reactions from New Sutures. O. P. Large.—p. 415.

Archives of Ophthalmology, Chicago

29:873-1064 (June) 1943

Fields of Vision in Cases of Tumor of Rathke's Pouch. H. P. Wagener and J. G. Love.—p. 873.
*Chemotherapy in Ophthalmology. J. G. Bellows.—p. 888.
Micropsia and Telopsia Limited to Temporal Fields of Vision. M. B. Bender and N. Savitsky.—p. 904.
Pseudoisochromatic Plate Test of Color Vision: Practical Application. R. E. Shoemaker.—p. 909.
Diabetic Retinosis in Chinese. R. H. Buck.—p. 919.
Origin and Pathogenicity of Pseudomonas Pyocyanea in Conjunctival Sac. J. C. McCulloch.—p. 924.
Adie's Syndrome: Report of 2 Cases. J. T. Rooks.—p. 936.
Diplopia in Narcolepsy. M. Levin.—p. 942.
Riboflavin for Rosacea Keratitis, Marginal Corneal Ulcers and Catarrhal Corneal Infiltrates: Laboratory and Clinical Studies. Carol Ann Conners, R. E. Eckardt and L. V. Johnson.—p. 956.
Initial and Residual Effects of Ophthalmic Prisms on Visibility and Accommodation. M. Luckiesh and F. K. Moss.—p. 968.
Marginal Degeneration of Cornea. Martha R. Folk.—p. 975.
Comparison of Ocular Imagery. H. B. Field.—p. 981.
Hypersensitiveness of Mucous Membrane: III. Slit Lamp Studies of Conjunctival Reactions Induced in Normal and in Atopic Persons with Histamine, Ethylmorphine and Atopens. L. A. Feldman and H. Sherman.—p. 989.
Restoration of Binocular Vision After Unilateral Cataract Extraction. T. L. McKee.—p. 996.

Chemotherapy in Ophthalmology.—Bellows points out that penicillin, tyrothricin and related substances are more potent than the sulfonamides but that the ophthalmologic literature contains practically no reference to these substances. He tried tyrothricin experimentally and found that when it is placed in the conjunctival sac in 0.5 per cent suspension it is nonirritating but when used in high concentration produces considerable irritation and even cloudiness of the cornea. The substance was applied clinically in several cases of acute conjunctivitis with unimpressive results. The present report is limited to the sulfonamide drugs and mainly to sulfanilamide, sulfathiazole, sulfapyridine and sulfadiazine. Sulfanilamide or sulfapyridine given orally, sulfanilamide used topically or any

of the four most commonly used sulfonamide compounds employed with iontophoresis or combined with a wetting agent results in a chemotherapeutically adequate concentration in the ocular fluids and tissues. The action of these drugs is known to be inhibited by the secretion and detritus so commonly associated with ocular infection, by local anesthetics and by factors inherent in the avascularity of the cornea. Oral administration of sulfonamide compounds frequently produces ocular indications of systemic toxicity. Topical application of these drugs to the denuded cornea retards epithelial regeneration and promotes scarring. Given orally they are effective in the treatment of ocular complications of erysipelas, gonorrheal ophthalmia, trachoma, inclusion blennorrhea, ophthalmitis due to lymphogranuloma venereum, serpent ulcer, cellulitis of the lids and orbit, endophthalmitis, panophthalmitis and sympathetic ophthalmia. Applied locally they are effective in pyogenic dermatoses, infectious blepharitis and some forms of acute conjunctivitis. Although the sulfonamide compounds have proved to be the most important addition to the armamentarium of the ophthalmologist since the introduction of organic arsenicals, they should not be used indiscriminately or be considered a panacea.

Archives of Otolaryngology, Chicago

37:609-756 (May) 1943

Histopathologic Considerations in Treatment of Eustachian Tube. J. B. Farrior.—p. 609.
Preoperative Detection of Bleeding Tendency in Patients with Otolaryngologic Disorders. G. N. Haffly.—p. 622.
Diaphragm-Rod Prosthesis for Middle Ear. A. G. Pohlman.—p. 628.
Symptomatic and Empiric Treatment of Allergic Nose: Follow-up Questionnaire in Cases in Which Rhinitis Was Refractory to Treatment. E. King and J. H. King.—p. 645.
Stapes, Fissula Ante Fenestram and Associated Structures in Man: IV. From Fetuses 75 to 150 Mm. in Length. B. J. Anson and E. W. Cauldwell.—p. 650.
Criteria for Selection of Treatment of Cancer of Larynx. C. L. Jackson and J. V. Blady.—p. 672.
Lesions of Conduction Apparatus. H. B. Perlman.—p. 680.
Relation of Hematology and Otolaryngology. G. B. Gilmore.—p. 691.
Incidence of Vasomotor Rhinitis During Pregnancy. M. Mohun.—p. 699.
Unilateral Vasomotor Rhinitis Due to Interference with Cervical Sympathetic System. E. P. Fowler Jr.—p. 710.
Paredrine Hydrobromide Sulfathiazole Therapy of Infections of Upper Respiratory Tract. L. D. Sulman.—p. 713.

Archives of Physical Therapy, Chicago

24:327-380 (June) 1943

Experiments on Theory and Therapy of Shock. F. M. Allen.—p. 327.
Rapid Rehabilitation Following Certain Shoulder Fractures. H. Lefhoe.—p. 336.
Cerebral Birth Palsy with Special Reference to Physical Therapy. P. R. Lipscomb and F. H. Krusen.—p. 342.
*Artificial Fever and Vitamin Therapy in Treatment of Anterior Poliomyelitis: Report on Intraspinal Administration of Thiamine Chloride Combined with Artificial Fever Therapy. S. Stone.—p. 350.

Artificial Fever and Vitamins in Poliomyelitis.—Eleven patients with severe anterior poliomyelitis were treated by Stone with artificial fever and parenteral and oral vitamin therapy during the acute stage of the disease. Six patients received intramuscular or intravenous injections of thiamine hydrochloride and vitamins B and E orally. Five patients received the thiamine intraspinally in doses of 20 to 50 mg. eighteen to twenty-four hours before the next artificial fever treatment. The oldest patient was 17 and the youngest 2½ years. All the children had complete paralysis of one or more extremities, associated with generalized tenderness and pain on motion. Four to ten fever treatments were administered to each patient with a temperature range of 103 to 105 F. The artificial fever was administered by means of an inductopyrexia cabinet. Ascorbic acid in doses of 150 to 200 mg. was given to all patients while they were in the fever cabinet, together with fruit juices and saline solutions orally. The artificial fever was well tolerated. Relief of pain and spasm, improvement in circulation and texture of the skin of the affected extremities, prevention of contractures and improvement in strength of the affected muscles were the results from the combined treatment. All the children have continued in excellent health since the completion of the treatment and have shown no evidence of fibrosis or limitation of joint motions. The hospitalization time was greatly reduced in all cases. It is suggested that combined vitamin-artificial fever therapy has all the advantages of the Kenny hot fomentation treatment, besides favorably influencing regeneration of some neurons not completely destroyed by the virus. The action is probably nonspecific and is due to improvement in cell metabolism and relief of local vasospasm in affected extremities. While the number of patients treated so far is comparatively small, the results in those treated in the acute stage suggested that this method is superior to methods used in the past. Its application to other types of paralysis of spinal origin has given promising results.

Bulletin of Johns Hopkins Hospital, Baltimore

72:309-378 (June) 1943

Congenital Aneurysmal Dilatation of Aorta Associated with Arachnodactyly. R. W. Baer, Helen B. Taussig and Ella H. Oppenheimer.—p. 309.
Eversion and Herniation of Corpus Luteum. G. W. Corner.—p. 333.
*Relationship of Chemotherapy in Pneumonia to Persistence of Pneumococci. W. H. Harris Jr.—p. 338.
Nucleinate-like Action on White Blood Cells of Ether Insoluble Fraction of Lipoids from Beef Brains. Edna H. Tompkins.—p. 347.

Chemotherapy in Pneumonia and Persistence of Pneumococci.—Harris studied the persistence of pneumococci in the upper respiratory passages in 47 cases of lobar pneumonia treated with sulfonamide compounds by repeated throat cultures during the period of hospitalization. Forty-four and seven tenths per cent of the patients lost the pathogenic type pneumococcus during the administration of the drug; 17.0 per cent lost the pathogenic pneumococcus after the drug had been discontinued, but before discharge from the hospital; 38.3 per cent left the hospital carrying the pneumococcus responsible for their disease. Pulmonary complications were frequently associated with a prolonged carrier state. Heterologous type pneumococci were recovered in seven instances following the apparent disappearance of the pneumococcus type isolated on admission to the hospital. Comparison with the findings of the earlier literature reveals that the convalescent carrier rate has not been significantly reduced by the routine use of sulfonamide compounds in the treatment of pneumococcic pneumonia.

Journal of Neurophysiology, Springfield, Ill.

6:155-220 (May) 1943

Monkey (Macaca Mulatta) After Hemisection and Subsequent Transection of Spinal Cord. G. P. McCouch, J. Hughes and W. B. Stewart.—p. 155.
Effect of Insulin Hypoglycemia on Conditioned Reflexes. E. Gellhorn and H. Minatoya.—p. 161.
Cortical Localization of Symbolic Processes in Rat: II. Effect of Cortical Lesions on Delayed Alternation in Rat. C. T. Morgan and W. M. Wood.—p. 173.
Motor Response to Stimulation of Cerebral Cortex in Absences of Areas 4 and 6 (Macaca Mulatta). Margaret A. Kennard and W. S. McCulloch.—p. 181.
Sweat Gland Responses to Sympathetic Stimulation Studied by Galvanic Skin Reflex Method. C. P. Richter and F. Whelan.—p. 191.
Localization of Salivatory Center in Medulla of Cat. S. C. Wang.—p. 195.
Localization of Enzymes in Nerves: II. Respiratory Enzymes. D. Nachmansohn, H. B. Steinbach, A. L. Machado and S. Spiegelman.—p. 203.
Mechanism of Temporal Fusion: Effect of Photic Stimulation on Electrical Activity of Visual Structures. A. E. Walker, J. I. Woolf, W. C. Halstead and T. J. Case.—p. 213.

Journal of Urology, Baltimore

49:601-754 (May) 1943. Partial Index

Radiologic Findings and Anatomopathologic Results of Experimental Renal Trauma. A. Trabucco.—p. 601.
Retrograde Seminal Vesiculography. F. Gonzales-Iman.—p. 618.
Diverticula of Bladder. M. A. Llanos.—p. 628.
Experimental Production of Stones in Bladder. H. A. Davalos Jr.—p. 639.
Nonhormonal Adrenal Adenoma: Case Report. F. X. Timoney.—p. 654.
Removal of Broken Glass Catheter from Female Bladder. E. Burs.—p. 658.
Prostatic Resection in Vitro and in Vivo. G. O. Baumrucker.—p. 660.
End Results of 900 Cases of Transurethral Resection of Prostate. O. Mercier.—p. 665.
Sarcoma of Prostate Gland: Review of Literature; Table of Classification; Report of 4 Cases. M. M. Melicow, T. H. Pelton and G. W. Fish.—p. 675.
Complete Uterine and Vesical Prolapse with Incarceration Due to Multiple Vesical Calculi. L. P. Thackston.—p. 708.

New England Journal of Medicine, Boston

228:699-736 (June 3) 1943

Universality of a Specialty. D. Munro.—p. 699.
Single True Cysts of Spleen: Reports of 3 Cases. R. H. Sweet.—p. 705.
Roentgenographic Surveys for Tuberculosis in Massachusetts and Their Importance to Physician. P. E. Sartwell.—p. 711.
Skin Changes of Nutritional Origin. H. Jegbers.—p. 714.

228:737-772 (June 10) 1943

*Compound Fractures of Skull: Results of Surgical Therapy in 218 Cases. D. Munro.—737.
Spina Bifida and Cranium Bifidum: III. Occult Spinal Disorders. F. D. Ingraham and J. J. Lowrey.—p. 745.
Resection of Bladder Neck for Obstruction in Women: Report of Case. C. Mirabile.—p. 751.
Epidemiologic Aspects of Food Borne Disease. V. A. Getting.—p. 754.

Surgical Therapy in Fractures of Skull.—Munro presents an analysis of 218 cases of all types of compound fractures of the skull. Complete débridement should be done within forty-eight hours of the time of infliction of the injury or else no operation until completely healed for six to eight months. Patients should not be operated on until out of surgical shock and until the general condition warrants it. After the diagnosis has been made by palpation through the wound, the first and only dressing prior to débridement must be one that can be applied with an absolute minimum of handling. The débridement should be complete. It must be done in such a way as to avoid the spreading of bacterial contamination throughout the wound and the production of tissue necrosis; it should include the removal of all large foreign bodies. No wound that has been properly debrided should be drained. Irrigation of the wound before and during operation is condemned. Chemotherapy in the form of sulfanilamide or sulfadiazine is recommended both by mouth and in the wound, but only as an adjunct to properly conceived and executed surgery. Sulfathiazole should not be used in craniocerebral wounds.

New York State Journal of Medicine, New York

43:993-1088 (June 1) 1943

*Continuous Caudal Anesthesia in Obstetrics: Demonstration of Catheter Technic for Administration. F. R. Irving, C. A. Lippincott and F. C. Meyer.—p. 1023.
Role of Coronary Arteriosclerosis in Cardiac Hypertrophy. H. Gross and J. R. Lisa.—p. 1030.
Activity as Therapeutic Measure in Parkinsonian Syndromes. A. M. Rabiner and M. H. Hand.—p. 1033.
From Civilian Practice to Navy Medicine. H. J. Harris.—p. 1035.
Modern Spa, the Physician and the Patient. W. Merscher.—p. 1038.

43:1089-1182 (June 15) 1943

Persistent Tachycardia in Survivor Adrift at Sea for Eighty-Three Days. A. J. Horton.—p. 1119.
Thrombophlebitis Migrans Disseminata: Report of Case in Which Gangrene of Breast Occurred; Observations on Therapeutic Use of Dicumarol. E. P. Flood, M. H. Redish, S. J. Bocieh and S. Shapiro.—p. 1121.

Continuous Caudal Anesthesia in Obstetrics.—Irving and his collaborators used continuous caudal anesthesia in over 200 obstetric cases. A malleable needle or fine catheter is left in the caudal canal through which an injection is made at intervals. To derive the full benefit of continuous caudal analgesia, it should be withheld until uterine contractions are well established and the cervix is dilated to from 2 to 3 finger-breadths. The greatest dose with metycaine was 9,900 mg., with monocaine 2,250 mg. and with pontocaine 572 mg. The longest that the catheter was in position was twenty-nine hours. Several patients have complained of pain over the sacrum the day after delivery, and in 5 cases superficial skin infection developed but no abscesses. There was no apparent increase in postpartum morbidity, although the second stage was definitely prolonged and there was a significant increase in operative deliveries. There were 29 cases of fetal distress (13.3 per cent) in 218 cases. A sustained fall in blood pressure was observed in 22 of 118 cases (18.6 per cent). Of the 12 instances of fetal distress in the last 118 cases, 9, or 75 per cent, occurred in cases in which there was a sustained low blood pressure. In each of the remaining 3 cases there was a clear obstetric explanation for the fetal distress. One stillbirth is reported for which there is no apparent obstetric reason and which was probably a result of the caudal anesthesia. Continuous caudal anesthesia in obstetrics is not yet entirely free of danger to mother or child. Much more experience will be needed before it can be offered to the public. Until such time its use should be restricted to well staffed obstetric services.

Public Health Reports, Washington, D. C.

58:825-856 (May 28) 1943

Plan for Rodent Control in Cities. G. C. Sherrard.—p. 825.
*Bacteriostatic Action of Sulfadiazine on E. Typhosa in Carriers and Cases. A. V. Hardy.—p. 833.
Relapsing Fever: Tick Ornithodoros Turicata as Spirochetal Reservoir. G. E. Davis.—p. 839.
Tularemia: Spontaneous Occurrence in Shrews. G. M. Kohls and E. A. Steinhaus.—p. 842.

Sulfadiazine for Carriers of Eberthella Typhosa.—The favorable results of sulfonamide therapy in Shigella dysenteriae infections encouraged Hardy to extend his observations to typhoid. He used two quantitative tests designed to measure relatively the number of viable Eberthella typhosa in the lower enteric tract and in the feces. In one test fecal specimens were obtained by rectal swabs. In the other, passed fecal specimens were collected in glycerin saline preservative. A third nonquantitative cultural procedure was employed. The rectal swabs, after being used for inoculating plates, were dropped into tubes containing selenite F enrichment. Following incubation the swabs were again used for plating on agar. Routinely the author sought to obtain three pretreatment cultures from carriers and two from cases of typhoid. During medication and for one week thereafter cultures were taken daily. Sulfadiazine was used in the treatment of 19 chronic carriers, 4 convalescent carriers (including 1 treated as a case), 21 clinical cases and 1 clinical relapse. Quantitative cultural tests clearly demonstrated that this sulfonamide has a definite bacteriostatic effect on E. typhosa in the enteric tract. The chronic carrier state was not terminated by this treatment.

Puerto Rico J. Pub. Health & Trop. Med., San Juan

18:253-386 (March) 1943

Lymphogranuloma Venereum in Puerto Rico: Brief Survey of Its Clinical Manifestations and Treatment in 45 Cases. F. Hernández Morales and G. M Carrera.—p. 253.
Study of Balantidiasis Coli: Report of 2 Cases in Children Successfully Treated with Stovarsol. A. Diaz Atiles.—p. 287.
Sprue in Puerto Rico—Ten Years Later. R. Rodriguez-Molina.—p. 314.
In Vitro Action of Immune Serum on Larvae and Adult Parasites of Trichinella Spiralis. J. O. González.—p. 364.
Ants as Probable Agents of Dissemination of Shigellosis. Sophie Dehler Griffitts.—p. 380.

Radiology, Syracuse, N. Y.

40:433-438 (May) 1943

Introduction to History of Carcinoma of Cervix Uteri. E. H. Skinner.—p. 433.
Experiences in Treatment of Carcinoma of Cervix Uteri. L. C. Scheffey.—p. 436.
Further Experience with Pneumoperitoneum as Aid in Pelvic Irradiation. L. R. Sante.—p. 447.
Intravaginal Roentgen Irradiation of Cancer of Cervix. W. W. Wasson.—p. 454.
Further Study of Supervoltage X-Ray Therapy in Carcinoma of Cervix. H. E. Schmitz.—p. 458.
Tissue Dosage in Control of Carcinoma of Cervix. M. Garcia.—p. 463.
*Fluoride Osteosclerosis from Drinking Water. J. F. Linsman and C. A. McMurray.—p. 474.
Infected Lung Cyst. L. G. Rigler.—p. 485.
Roentgen Diagnosis of Placenta Previa. G. J. Baylin and S. S. Lambeth.—p. 497.
Polyostotic Fibrous Dysplasia: Review of Literature with 2 Additional Cases. N. J. Furst and R. Shapiro.—p. 501.

Fluoride Osteosclerosis from Drinking Water.—Linsman and McMurray report a case of osteosclerosis with mottled enamel of teeth, severe anemia not responding to antianemic therapy, and bilateral renal lesions. Diagnosis of fluoride osteosclerosis was proved by the history of a long residence in areas of endemic fluorosis and by fluorine analysis of the patient's bones and teeth. Osteosclerosis may be a dangerous sequel to the chronic ingestion of fluorine-containing water since it may give rise to a secondary anemia due to encroachment on the blood-forming marrow. There is also the possibility of kidney damage due to chronic fluoremia. Areas in the United States in which dental fluorosis exists and where the fluorine content of the drinking water is over three parts per million should

be systematically studied by the public health authorities to determine the existence of osteosclerosis. All patients with dental fluorosis and anemia and/or signs of renal impairment should have x-ray examination of the skeletal system.

Rocky Mountain Medical Journal, Denver

40:289-360 (May) 1943

Edward Jackson, Student and Teacher. W. H. Crisp.—p. 307.
Note on Absence of Serologic Evidence of Syphilis Among Population of Small Utah City. F. B. Queen and M. E. Marriott.—p. 317.
Conditioned Reflex Treatment for Alcoholic Addiction. H. R. Carter. —p. 318.
Arteriosclerosis. T. D. Cunningham.—p. 321.

40:361-432 (June) 1943

Traumatic Dislocation of Hip with Fracture of Acetabulum. A. M. Okelberry.—p. 378.
Heat Sickness. E. H. Carleton and A. G. Kammer.—p. 384.
The Doctor and New Colorado Birth Certificate Law. Eudochia Bell Smith.—p. 390.
Acute Polyradiculoneuritis in Colorado. Mariana Gardner and R. P. Forbes.—p. 394.

South Carolina Medical Assn. Journal, Florence

39:113-142 (May) 1943

Physician in Social Whirl. G. D. Grice.—p. 113.
Word to Graduates of Medical College in 1943. R. Wilson.—p. 118.
Primary Atypical Pneumonia. W. H. Kelley.—p. 119.
Review of Recent Studies in Epidemiology of Rheumatic Fever. F. M. Ball.—p. 122.

Southwestern Medicine, Phoenix, Ariz.

27:91-112 (April) 1943

Allergy Studies in the Tuberculous. O. H. Brown.—p. 92.
Mumps and Associated Nephritis Complicated by Encephalitis and Blindness. M. Frank and M. Pijoan.—p. 95.
Treatment of Pneumococcic Meningitis with Sulfadiazine: Case Report. B. P. Storts Jr.—p. 98.

27:113-138 (May) 1943

*Treatment of Impetigo Contagiosa with Sulfadiazine-Plastic Preparations and Exclusion of Dressings. M. Pijoan, F. Worman and J. Pijoan. —p. 118.
The Doctor of Medicine and His Responsibility. A. W. Adson.—p. 120.

Treatment of Impetigo.—Pijoan and his collaborators employed a water soluble plastic (methyl cellulose, methocel) and sulfadiazine preparations for bacteriostatic plastic films. The scabs were cleansed with cotton soaked in hydrogen peroxide. As much as possible of the scab was removed without unnecessary trauma to the infected skin area. While the surface was still moist, tincture of sulfadiazine-methocel (solution I) was applied with a cotton applicator. This may be repeated several times until the entire lesion or area is thoroughly impregnated. Sulfadiazine-methocel jelly (solution II) was then applied to the entire area. The coating should be approximately 0.5 mm. in thickness. It will dry within three to five minutes and will form a new film over the lesion. One treatment is usually satisfactory. Bacteriologic studies revealed that the impetigo lesions were caused by staphylococci. Bacteriologic counts were done on 0.1 cc. of a twenty-four hour broth culture by the plate colony counting system. The results showed characteristic observations including the extremes of pretreatment counts. The more complete the débridement, the more satisfactory were the results. The débridement should be a cautious procedure, as trauma might induce scar formation with possible disfigurement. All lesions showed approximately the same diminution of bacteria.

War Medicine, Chicago

3:565-700 (June) 1943

*Military Malaria Control. P. F. Russell.—p. 565.
Problem of Herniated Nucleus Pulposus in Military Service. W. G. Haynes.—p. 585.
Arthropod Borne Diseases: With Special Reference to Prevention and Control. S. Jarcho.—p. 596.
Development of Medical Service for Airline Operations in Africa: Medical Department, Pan American Airways—Africa, Ltd.—p. 619.

Military Malaria Control.—According to Russell, malaria is the principal disease hazard to troops in hyperendemic areas. Military malaria control involves (*a*) fixed installations, around which mosquito control measures are feasible and in which individual control measures are subsidiary, and (*b*) field areas, in which troops fighting or maneuvering are on guard or sentry detail or are servicing convoys or airplanes, usually without the protection of mosquito control. Here "fighting malaria control" is required and measures of individual malaria prophylaxis are vital, with full use of suppressive antimalaria drugs, bed nets, protective clothing, sprays and repellents, and with intelligent cooperation by all ranks. True or causal prophylaxis is not certain to follow the use of any known drug; sporozoites do not appear to be destroyed in the body by drugs. Malaria probably cannot be eradicated from a community by the use of drugs. The so-called prophylactic drugs achieve early or, better, suppressive treatment. Under combat conditions of exposure and great fatigue it is perhaps natural that suppressive treatment will be even less effective than it is in peacetime. The three drugs for malaria prophylaxis are plasmochin, atabrine (quinacrine hydrochloride) and quinine. There appears to be no justification for attempting individual or mass malaria prophylaxis by plasmochin either alone or supplemented by atabrine or quinine. Plasmochin is a polyvalent gametocide which destroys the crescents of Plasmodium falciparum. Doses of 0.04 Gm. of plasmochin naphthoate or 0.02 Gm. of plasmochin hydrochloride (⅔ grain of plasmochin) taken on each of two or three days, after meals, will generally clear the blood stream of all gametocytes. This has some value in preventing the infection of mosquitoes. It appears that atabrine in doses of 0.4 Gm. of the dihydrochloride per week as suppressive treatment will be as good as or perhaps a little more effective than the use of quinine dihydrochloride in daily 5 grain (0.32 Gm.) doses. The atabrine may be taken in 0.1 Gm. doses twice a day on two nonsuccessive days a week, with water and after meals. Atabrine causes no discomfort to the majority of persons. In a certain percentage there is some gastrointestinal irritation and a temporary yellowing of the skin. But the tinting of the skin will clear up after the administration is stopped, and the gastric irritation is usually temporary and mild. When severe and repeated reactions occur, quinine should be substituted. It is not clear from published reports that 0.4 Gm. of atabrine dihydrochloride a week is sufficient for suppressive treatment in highly endemic areas. Possibly the dose in some areas should be 0.6 Gm. a week, 0.1 Gm. daily, with a double dose on Sundays. It is not clear how many months of constant atabrine prophylaxis can safely be tolerated. The limit appears to be well over six months. As many and as long intervals of freedom from atabrine as feasible should be allowed. The most important drug in malaria prophylaxis has always been quinine. It will frequently (but not always) prevent clinical symptoms. The usual prophylactic dose of quinine is 5 to 10 grains (0.32 to 0.64 Gm.) of quinine daily after the evening meal. Some authorities prefer 10 grains twice a day on two or three days a week. In highly malarious areas even 15 grains (1 Gm.) daily may not suppress clinical symptoms in all cases. Under present conditions quinine prophylaxis is to be used only for men who cannot tolerate atabrine.

Wisconsin Medical Journal, Madison

42:565-656 (June) 1943

Physiology of Heart and Circulation. W. J. Meek.—p. 585.
Pathology of Hypertension. E. T. Bell.—p. 590.
Hypertension. I. H. Page.—p. 594.
Evaluation of Modern Concept of Hypertension and Its Therapeutic Implications. F. D. Murphy.—p. 597.
Logical Approach to Diagnosis of Heart Disease. A. R. Barnes.—p. 601.
Rocky Mountain Spotted Fever. B. I. Pippin, R. E. Housner and G. Parke Jr.—p. 604.
Comments on Treatment. A. J. Quick and A. L. Tatum.—p. 608.

Yale Journal of Biology and Medicine, New Haven

15:657-768 (May) 1943

Dynamic Physical Fitness in Adolescence. J. R. Gallagher and L. Brouha.—p. 657.
Study of 1942 Fly Population of New Haven. M. E. Power, J. L. Melnick and M. B. Bishop.—p. 693.
Ecologic Study of Poliomyelitis in Connecticut, 1931-1941. H. A. Wenner.—p. 707.
Essential Amino Acid Requirements of Man. R. J. Block—p. 723.
Diethylstilbestrol Excretion in Tumor Bearing Rabbits. A. D. Bass and W. T. Salter.—p. 729.
Grafted Eyes of Young and Old Adult Salamanders (Amblystoma Punctatum) Showing Return of Vision. L. S. Stone and C. H. Cole. —p. 735.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Surgery, Bristol

30:289-396 (April) 1943

Congenital Dislocation of Hip. H. Platt.—p. 291.
New Free Graft: Applied to Reconstruction of Nostril. H. Gillies. —p. 305.
Repair of Limb Wounds by Use of Direct Skin Flaps. D. O. Brown. —p. 307.
Sciatica and Mechanism of Production of Clinical Syndrome in Protrusions of Lumbar Intervertebral Disks. J. E. A. O'Connell.—p. 315.
Use of Irrigation Envelope in Treatment of Lacerated Wounds and Compound Fractures.—p. 328.
Cysts of Spleen. M. Paul.—p. 336.
Excision of Esophagus for Malignant Growth by Abdominocervical Route. H. A. Kidd.—p. 340.
Fibrous Stricture of Gullet of Nineteen Years' Duration: Feeding by Extrathoracic Rubber Esophagus Throughout Greater Part of That Time. Restoration of Normal Swallowing by Beuginage. Closure of Gastrostomy and Esophagostomy. G. G. Turner.—p. 344.
Effects of Stretching Nerves After Suture. W. B. Highet and F. K. Sanders.—p. 355.
Experimental Study on Nerve Suture with Various Suture Materials. L. Guttmann.—p. 370.

British Medical Journal, London

1:685-714 (June 5) 1943

Ophthalmoscope in Clinical Medicine: Interior of Living Eye Considered as Biochemical Laboratory. A. M. Ramsay.—p. 685.
Hematemesis and Melena, with Special Reference to Bleeding Peptic Ulcers. F. A. Jones.—p. 689.
Primary Bronchial Carcinoma at Age of 4 Years 4 Months. C. Elaine Field and J. P. Quilliam.—p. 691.
Nasal Intubation: Dangers and Difficulties from Rhinologic Aspect. A. R. Dingley.—p. 693.
Maintenance Treatment with Digitalis. A. S. Rogen.—p. 694.

1:715-746 (June 12) 1943

Bridgeheads of Child Health in the Five Ages of Childhood. C. McNeil. —p. 715.
Aspects of Chemotherapy of Pneumonia. T. Anderson.—p. 717.
Enteric Group Fevers in Prisoners of War from Western Desert: With Special Reference to Prophylactic Inoculation, January 1941 to February 1943. J. S. K. Boyd.—p. 719.
Familial Idiopathic Methemoglobinemia, with Note on Treatment of 2 Cases with Ascorbic Acid. J. Deeny, E. T. Murdock and J. J. Regan.—p. 721.
New Method of Grafting. P. Gabarro.—p. 723.
Treatment of Fractured Great Toe. G. N. Taylor.—p. 724.

Edinburgh Medical Journal

50:257-320 (May) 1943

*Typhus Rickettsial Agglutination Tests in Middle East Forces and Egypt. C. E. Van Rooyen and W. G. C. Bearcroft.—p. 257.
Social Psychiatry. H. Stalker.—p. 273.
Prognostic Blood Tests in Tuberculosis: Comparison of Reliability of Four Methods, Based on Clinical and Radiologic Findings. J. T. Paterson.—p. 288.
Lung Cancer and Early Diagnosis. C. K. Robertson.—p. 296.
Vitamin B1 and Toxemia of Pregnancy. R. Kapeller-Adler and J. A. Cartwright.—p. 305.

Typhus Rickettsial Agglutination Tests.—Van Rooyen and Bearcroft tested 50 military and 23 civilian typhus patients from the Middle East area for serologic evidence of agglutinins against Proteus vulgaris OX19, OX2 and OXK, as well as agglutinins against epidemic and murine rickettsias. Results show close correlation between the Weil-Felix and rickettsial agglutination tests. Experiments to verify the specificity of the rickettsial agglutination test have been performed on 100 normal human serums and on 74 pathologic serums from 25 cases of malaria, 12 of typhoid, 22 of sandfly fever, 4 of spirochetal relapsing fever and other febrile conditions, all of which were carefully selected and accurately diagnosed. The results have shown that the rickettsial agglutination test did not give false positive agglutination in the diseases specified. The rickettsial agglutination test is a highly specific and reliable test for typhus, equal if not superior to the Weil-Felix test. It possesses the advantage of differentiating between epidemic and murine varieties of infection, which the Weil-Felix reaction cannot do. The principal technical disadvantage of the rickettsial agglutination test is that rickettsial agglutination is very fine and is liable to be missed, whereas agglutination of Proteus vulgaris is easily visible. Both reactions become positive from the seventh day of illness on, i. e. usually two days after the rash has appeared. The agglutinin titer reaches its maximum about the fourteenth day of illness and thereafter declines at different rates. Proteus agglutinins recede more quickly than those for rickettsias. In a case of epidemic typhus rickettsial agglutination was still present in high titer on the sixty-fourth day after onset of symptoms when the Weil-Felix test was fast disappearing. In severe epidemic Egyptian typhus showing high titer Weil-Felix test reactions, epidemic rickettsias are usually agglutinated to similar or greater serum dilutions. Simultaneously, low titer cross agglutination for murine rickettsial suspensions occurs, and the E. R./M. R. ratio is approximately in the order of 3:1. In both Palestinian and Syrian mild murine typhus, which yield high titer OX19 agglutination, the homologous rickettsias are strongly clumped, frequently to even higher titer, with some cross agglutination of epidemic rickettsias in lower dilution, the M. R./E. R. ratio being roughly 10:1. All serums derived from patients suspected of having typhus should be tested in quintuplicate for presence of agglutinins for Proteus OX19, OX2 and OXK and epidemic and murine rickettsias.

Lancet, London

1:699-728 (June 5) 1943

Drug Control of Malaria. W. Hughes and F. Murgatroyd.—p. 699.
*Tuberculosis Treated with Promin. F. R. G. Heaf, J. V. Hurford, A. Eiser and L. M. Franklin.—p. 702.
Mapharside in Treatment of Early Syphilis. A. O. F. Ross.—p. 704.
*Strangulated Femoral Hernia: Review of 100 Cases. J. Jens.—p. 705.
Early Diagnosis of Wound Infection, with Special Reference to Mixed Infections. D. McClean and H. J. Rogers.—p. 707.
Outbreak of Typhoid Fever. S. M. Allan.—p. 708.
Hyperpyrexia Superimposed on an Attack of Acute Tonsillitis. T. B. Snell.—p. 710.
Histologic Effect of Proflavine Powder on Fresh Wounds. F. Hawking. —p. 710.

Promin in Tuberculosis.—Heaf and his associates used sodium p,p'-diaminodiphenylsulfone-N,N'-didextrose sulfonate (promin) in the treatment of 19 patients with pulmonary, laryngeal and genitourinary tuberculosis. The drug was given continuously for two weeks; one week's rest followed before the next fortnightly period was started. In calculating the length of treatment these rest weeks are included, as the blood concentration of promin was well maintained during that period. The courses varied in length from two to fifteen weeks, the majority lasting more than six weeks and the average being eight and a half weeks. With oral administration, which was employed in 13 cases, the highest blood concentration of promin was 4.4 mg. per hundred cubic centimeters; this was reached with a dosage of 0.4 Gm. three times a day; the majority averaged 2.5 mg. The hemoglobin value and the erythrocyte count fell in all cases until iron was given as a routine. Toxic symptoms such as cyanosis, headache, nausea, vomiting and giddiness were also observed with oral administration of the drug. There was no tendency toward anemia or toxicity in the 2 cases in which the drug was administered intravenously. The authors think that promin should not be given by mouth to patients with advanced pulmonary tuberculosis who show toxemia and poor resistance. The local application of promin in cases of laryngeal tuberculosis is worthy of further investigation.

Strangulated Femoral Hernia.—Some 115 patients with strangulated femoral hernia were treated in one institution in five years, according to Jens. A depressing feature of these admissions was the variety of diagnoses which accompanied the patients to the hospital—almost any condition capable of causing abdominal pain being suggested rather than the correct one. The surprisingly large number of 42 patients had no previous history of hernia. Reduction of strangulated femoral hernia should be accomplished by operation. The mortality for the 100 patients was 14, and of these 11 showed gangrene of the contents. Strangulation of the small intestine was found in 86 patients. In this group 20 had gangrenous bowel, and the gangrene was sufficiently extensive to require resection in 12 patients, 8 of whom died, giving a mortality for resection of 66 per cent for gangrenous small intestine. Of the remaining 66 patients with strangulation of the small intestine, 4 died

—all of them having intestine and omentum strangulated. A review of the time factor in the cases in which gangrene was found discloses that the patients who died had a history lasting on an average over six days, whereas the patients who lived had been ill on an average for only three days. A reduction in the total mortality can be attained only by earlier diagnosis and earlier operation. Intraperitoneal sulfanilamide therapy offers hope of an improved mortality rate in cases in which resection of the bowel is necessitated by reason of intestinal gangrene.

New Zealand Medical Journal, Wellington

42:89-142 (June) 1943

New Zealand's Requirements for Doctors. C. E. Hercus and H. D. Purves.—p. 89.
Amputation Under Ice Anesthesia. A. E. Moore and D. W. Guthrie. —p. 97.
Mortality from Tuberculosis in Maori Race. N. L. Edson.—p. 102.
Observations on Inguinal Hernia. W. M. Cotter.—p. 111.
Prefrontal Lobotomy. R. W. Mellicott.—p. 113.
Punch Card for Neoplastic Diseases. E. P. Allen.—p. 121.
Death from Secondary Shock. E. M. Dick.—p. 125.
*Stilbestrol in Control of Transitory Priapism. H. Gaudin.—p. 127.
General Paresis: Results of Mental Hospital Treatment and Plea for Prevention. K. R. Stallworthy.—p. 129.

Diethylstilbestrol in Control of Transitory Priapism.—Gaudin applies the term transitory priapism as distinct from true priapism to recurrent nocturnal erections without sexual stimulus, which are frequently the accompaniment of inflammatory lesions of the urogenital tract or are of nervous origin. He reviews 4 cases in which transitory priapism was counteracted by diethylstilbestrol. The first patient was given 0.5 mg. of diethylstilbestrol daily. Relief followed on the second night. One week later the dose was dropped to 0.5 mg. on alternate nights, and at the end of three weeks it was dropped altogether.

Archivos Argentinos de Pediatría, Buenos Aires

16:199-262 (March) 1943. **Partial Index**

*Early Pulmonary Tuberculous Cavitation in Infant: Case. P. I. Elizalde, P. R. Cervini and R. I. Latienda.—p. 209.
Simmonds Hypophysial Syndrome: A Segers, María E. Díaz and A. Russo.—p. 218.

Early Tuberculous Cavitation in an Infant.—Elizalde and his collaborators report the case of an infant 4 months of age. The mother and the child were living with a tuberculous patient for about a month. The infant was fed by the mother and was not given BCG vaccination. Several tuberculin tests gave negative results. When the infant was 3 months old both he and the mother presented clinical and x-ray signs of pulmonary tuberculosis. The roentgenograms of the infant showed signs of a cavity in the right lung. The infant died at the age of 4 months. Postmortem examination revealed acute pulmonitis and atelectasis, a cavity in the right upper lobe and foci of acute inflammation about the cavity. Microscopic examination revealed acid-alcohol resistant bacilli in the tissues near the cavity which stained with Ziehl-Nielsen stain. The cavity had the characteristics of Shminck's type of primary tuberculous cavity. Such cavities are extremely rare in pulmonary tuberculosis of infants.

Deutsche medizinische Wochenschrift, Leipzig

68:185-203 (Feb. 20) 1942. **Partial Index**

*Pathologic and Clinical Aspects of Hiatus Hernia. H. Berning.—p. 185.
Importance of Iron Metabolism for Therapy. H. Albers.—p. 188.
*Diagnosis and Treatment of Chronic Carbon Monoxide Poisoning. Symanski.—p. 192.
Diagnosis and Differential Diagnosis of Multiple Myeloma by Sternal Puncture. F. Kienle.—p. 195.

Hiatus Hernia.—Berning differentiates three forms of hiatus hernia: (1) hiatus hernia in the presence of a congenitally shortened esophagus, (2) paraesophageal hiatus hernias and (3) hernia due to hiatus insufficiency. In the type last mentioned, in which the esophagus is not shortened, the distal end of the esophagus together with adjoining portions of the stomach become herniated. Interest in this form led to anatomic studies on changes brought about by age in the region of the esophageal hiatus. These studies revealed that hiatus insufficiency is a preliminary stage of this type of hernia. Changes that play a part are the so-called epiphrenal bell, resulting from age involution of the left hepatic lobe and of the subdiaphragmatic ring of fat, also flattening of the diaphragm with age and increase in intra-abdominal pressure due to such conditions as ascites, obesity, chronic constipation and abdominal tumors. Factors that cause hiatus insufficiency later cause true herniation. The author cites an illustrative case history. The clinical symptoms are similar in all three forms. Roentgenologic examination is essential for a correct diagnosis. Hiatus hernia should be thought of in older patients with symptoms of gastric or duodenal ulcer, of cholelithiasis, of gastric or esophageal carcinoma or of coronary sclerosis. Careful clinical and roentgenologic examination should precede the laparotomy. In patients of advanced age medical treatment should be tried first. Increased intra-abdominal pressure is to be avoided. Patients must be cautioned against physical exertion. Meals should be small and more frequent so as to avoid filling the herniated part of the stomach. Surgery is necessary in case of threatening signs of incarceration. Operation is possible by the thoracic and the abdominal route. Harrington of the Mayo Clinic, who has operated in a large number of cases, prefers the abdominal route with reduction of the hernial aperture.

Chronic Carbon Monoxide Poisoning.—Symanski maintains that chronic carbon monoxide poisoning exists and that it may result from a succession of numerous mild acute attacks of poisoning. Carbon monoxide poisoning is usually an occupational disease which pursues a mild course. Patients complain generally of headache and nausea. The symptoms are usually absent in the morning but return in the course of the day. Later they persist longer and disappear only when work is stopped for one or several days. Finally they no longer subside. Then there may be pallor, general weakness, vomiting and nervous and neurasthenic disorders. Occasionally the patient states that co-workers have the same complaints. Investigation at the place of work may reveal the source of poisoning. Objective signs are usually slight. Polyglobulism has been observed as well as hyperchromic anemic changes. The quantitative determination of carbon monoxide hemoglobin with the step photometer is decisive in the diagnosis. Chronic carbon monoxide poisoning is chiefly a problem of industrial medicine.

Klinische Wochenschrift, Berlin

21:401-424 (May 2) 1942. **Partial Index**

Ulcus, Carcinoma and "Ulcus Carcinoma." H. Kürten.—p. 401.
*Animal Experiments on Effect of Malnutrition and Vitamin C Deficiency Respectively on Course of Dysentery Infection. W. Dötzer and A. Schuller.—p. 405.
Statistics on Clinical Picture of Kruse-Sonne (E) Dysentery. K. Roelcke.—p. 407.
Relations of Vitamin K to Intestinal Bacteria Growth. T. Schmidt and K. H. Büsing.—p. 411.
Determination of Velocity of Pulse Transmission by Means of Short Wave Vasography. L. Rösa.—p. 415.

Malnutrition and Vitamin C Deficiency in Dysentery.—Dötzer and Schuller have demonstrated that the resistance of guinea pigs against experimentally produced dysentery of the Flexner-Y or Kruse-Sonne-E strains was reduced by malnutrition or by vitamin C deficiency. The resistance was reduced about equally by quantitative and qualitative malnutrition. The resistance of the animals was increased by early administration of large doses of vitamin C. Guinea pigs on a high qualitative and quantitative diet were better protected against dysentery. Death of animals on a high qualitative and quantitative diet resulted from high infectious doses only. Death even from high infectious doses did not occur when the resistance of the animals on a high qualitative and quantitative diet was increased by large doses of vitamin C. The results of these experiments, as well as clinical observations on patients who are given a quantitatively differentiated diet, suggest that the administration of vitamin C may be helpful both as prophylaxis and as a therapeutic measure in epidemic dysentery.

Book Notices

Allergy, Anaphylaxis and Immunotherapy: Basic Principles and Practice. By Bret Ratner, M.D., Clinical Professor of Pediatrics, New York University College of Medicine, New York. Cloth. Price, $8.50. Pp. 834, with 88 illustrations. Baltimore: Williams & Wilkins Company, 1943.

The stimulus for writing this book, the author says in the preface, came while he was planning a somewhat different work, a treatise on allergy in childhood. Parenthetically, the reviewer hopes that Ratner may soon complete this latter work. It should be good. The author states that he was impressed by the possibility of clearly presenting the difficult subjects of allergy, immunology and anaphylaxis through a comprehensive discussion of serum sickness. And so one or several chapters grew into a book or, rather, the better part of this volume. Had the author limited himself to this excellent and comprehensive presentation of our knowledge of serum sickness and its relationship to allergy and anaphylaxis, he would have published a well organized monograph of about four hundred pages instead of a book of over eight hundred pages. In addition to the presentation of the important subject of serum sickness in a most comprehensive manner he would have succeeded without dilution or distraction in presenting a somewhat simplified but excellent integration of this subject with the principles of general immunology, allergy and anaphylaxis.

Following an introductory chapter, the subject would have started on page 375 (book II of this volume) with the author's discussion of allergy to immunotherapeutic agents. Here the principles of hypersensitiveness are clarified. Following this the subject of serum sickness is covered in one hundred and fifty pages. This portion reviews our current knowledge of the condition. It is crammed with valuable information. The author analyzes the significance and the clinical application to allergy of many of the fundamental investigations of serum sickness. Wherever possible, the author relates animal experiments to clinical allergy. In this lies the main value of this work. To complete book II, a brief but thorough presentation is made of the subject of reactions and accidents due to blood transfusions.

Book III, consisting of the final one hundred and fifty pages, deals with many theoretical considerations of allergy, its physiologic pathology and its relationship to anaphylaxis. An excellent presentation of the "mechanism" of the allergic state closes the subject. The adequacy of the bibliography and subject index which follows is indicated by the fact that it covers eighty-one additional pages.

And now with regret the reviewer must speak of the first three hundred and seventy-five pages. The material contained in this part (book I) is important. It is excellent material that might have gone well in a treatise on general medicine or on general therapeutics written by a clinical immunologist. Unfortunately, the subject matter of book I is not well integrated with that of book II and book III. To divide this volume as the author did into three separate books emphasizes rather than overcomes the lack of unity. In this rather irrelevant book I the author discusses such varied subjects as materials used in diagnosis and therapy of infectious diseases, description and methods of preparation of materials (antiserums, convalescent serum, transfusion materials and modes of administration, preparation of toxoid and of smallpox vaccine). This is followed by a discussion of sulfonamides and sulfonamide therapy. Apparently the reason for the general discussion of the sulfonamides in this book is their therapeutic importance. While allergic reactions occur following their use, a discussion of their structure and use is not relevant to the general subject of drug allergy.

Book I finally and tediously closes with two hundred pages devoted to immunotherapy. This consists of a brief discussion of the treatment of an alphabetically arranged list of diseases beginning with anaerobic infections and ending with yellow fever. This is followed by book II.

Principles and Techniques of Nursing Procedures As Developed in St. Mary's Group of Hospitals of St. Louis University. [By] Sister Mary Agnita Claire Day, B.S.M., R.N., B.S. in Nursing. Cloth. Price, $3.50. Pp. 574, with 94 illustrations. St. Louis: C. V. Mosby Company, 1943.

This is an exceptionally complete and detailed manual of procedures governing every situation in which a nurse may find herself. This includes a chapter of special interest to Catholic nurses dealing with their religious obligations to Catholic patients. The book is divided into five parts, of which part I consists of a single chapter having to do with arrangement of the patient's environment—that is the room, the bed, the care of flowers and the care of service rooms, utility rooms, kitchens and linen closets and the removal of stains. In part II are chapters dealing with admission procedures, patient's bath and toilet, food service, elimination, general comfort measures, psychologic needs and religious needs. The chapter on psychologic needs, including diversional therapy, flowers, letters, radio, visitors, games, handiwork and library, is especially good. In part II also are five excellent chapters on application of dry heat and cold, hydrotherapy, radiant energy and massage. Part III has two comprehensive chapters on the nurse's duty in connection with x-ray, laboratory and other diagnostic tests, two chapters on surgical technic outside the operating room, four chapters on administration of medicines by various routes, one chapter on aspiration and injection of body cavities, three chapters on medication applied to special systems by irrigation: digestive, genitourinary, eye, ear, nose and throat, and a chapter on medical aseptic nursing technic. Part IV deals with orthopedic procedures, such as splints, bandages, straps, traction and suspension devices, physical therapy and occupational therapy. Part V touches on the nursing care of the psychiatric patient in the general hospital. The plan of the book is to give a general description of the type and purpose of the procedure about to be described. This is followed by general instructions arranged in brief numbered paragraphs. Then follows a list of requisite equipment and a step by step description of technic. Finally a method of recording is described. The book is richly illustrated with photographs, charts and diagrams. It should be a valuable textbook or reference book. It contains a chart in which a student can keep a record of each procedure described, together with the date when it was demonstrated to her and by whom supervised and how many times practiced. There is an excellent index.

A Study of Endometriosis, Endosalpingiosis, Endocervicosis and Peritoneo-Ovarian Adenosis: A Clinical and Pathologic Study. By James Robert Goodall, O.B.E., B.A., M.D., Consulting Staff in Gynecology and Obstetrics, Royal Victoria Montreal Maternity Hospital, Montreal, Canada. Fabrikoid. Price, $5.50. Pp. 140, with 30 illustrations. Philadelphia, Montreal & London: J. B. Lippincott Company, 1943.

Since the classic pioneer publications of Sampson, beginning in 1921, it cannot be said that there has been any substantial addition to our knowledge of this common and still rather mysterious pathologic entity. Nor can it be said that the monograph of Goodall contributes much toward its elucidation, or even that it is a satisfactory review of existing knowledge.

The greater portion of the book is devoted to a discussion of types of endometriosis, and the author's grouping will probably be confusing to the average reader. For example, he includes among these types what he calls "endometrial endometriosis" (!) but his description indicates that by this term he refers to the lesion universally spoken of as hyperplasia of the endometrium. While it is possible that this may in some way be related to endometriosis, this fact has not been established, and there is certainly no justification in considering it a type of the latter. Another variety which would seem questionable on the basis of our knowledge is the "endocervicosis" referred to throughout the book.

Much of the author's discussion is along philosophic rather than scientific lines. There is scarcely a page which does not contain statements that are either highly questionable or obviously incorrect, and these are uttered in a rather irritatingly oracular "ipse dixit" fashion. A few examples will serve to illustrate this better than many paragraphs of discussion: p. 13, "the action of estrin is normally limited to the superficial two

thirds of the endometrium"; p. 14, "areas of lack of response in endometriosis are extremely uncommon but have seldom, if ever, been described" (every trained gynecologic pathologist has long been familiar with these differences in hormonal responsiveness); p. 15, "active endometriosis and pregnancy never coexist" (more than 60 such cases are available in the literature); p. 42, "endometriosis of whatever variety is an expression of vitiated endocrinology"; p. 61, "it is now clear—and, I think, beyond all possibility of doubt—that all cases of endometriosis take their origin from some part of the endometrium" (notwithstanding the work and expressed opinions of men like Meyer and Sampson); p. 79, "Endosalpingiosis is the result of subacute salpingitis"; p. 119, "reactions to abnormal endocrinology are chiefly in the nature of allergy"; and so on.

This book is, in other words, largely a parading of the author's hypotheses. As far as can be gathered, he believes that the responsible causes of endometriosis are "spill" and lymphatic dissemination (he constantly compares it with infection and differentiates acute and chronic forms), with such underlying factors as hyperestrinism and "peritoneal sclerosis." Illustrations are sparse, the best being the reproductions of some of Sampson's original colored plates. The whole tone of this book is in sharp contrast to the original work of Sampson, which was a model of soundly scientific and conservatively presented investigation. One will find in many publications much less pretentious than the one under review a far more complete survey of the problem of endometriosis without the necessity of following the author's inventive mind through many pages of pseudoscientific verbiage.

How to Keep Fit and Like It: A Manual for Civilians and a Plan for a Community Approach to Physical Fitness. By Arthur H Steinhaus, Ph.D., M.P.E., Professor of Physiology, George Williams College, Chicago, Alma M. Rawlins, A.M., Assistant Professor of Hygiene and Physical Education, George Williams College, Lt. Comdr. Charles D. Giauque, U.S.N.R., and Edward C. Thomas, B.S., Physical Director, South Chicago Y. M. C. A., Chicago. Illustrated by Lea Waterman. Paper. Price, 25 cents. Pp. 64, with illustrations. Chicago: Consolidated Book Publishers, Incorporated, 1943.

This is a manual for persons desiring to guide their own physical fitness programs and a training textbook for instructors in group programs in communities. It is premised on sound policy and based on the experiences of trained physical directors and other experts in this field. These policies have resulted in the recommendation for pleasant and effective exercises for physical fitness. It is a small, concise volume, devoid of all "filler," and abounds in good common sense and advice. It teaches how to grade one's exercises at home, in the gymnasium or in the great outdoors. It is sufficiently illustrated to lend itself to home training and has the proper medical approach in the matter of regular physical examinations and in the development of muscles while losing excess adipose tissue. Adequate nutrition and food values are given full consideration in the fitness program outlined. It is streamlined for war service and if its program is followed systematically the reader will profit both physically and mentally. Selective Service surveys reveal not only that defects, deficiencies, diseases and disorders are present with unexpected numbers in the citizens of this enlightened country but, in addition, people as a whole stand revealed by military experience as soft, flabby, pampered and direfully in need of physical conditioning. Col. Theodore P. Banks, chief of the Athletic and Recreation Branch of the Special Service Division of the War Department, says "Many young men are entering the army today totally unprepared for military life. It takes weeks to bring them into the physical condition for military training. This means weeks of wasted time and effort, which could be avoided if every young man now in high school should engage in physical activities." This is not only true in time of national crisis but equally true in time of peace and is reflected in the lost man-hours in industry due to illness and accident caused by physical unfitness and unpreparedness and inability to carry one's full responsibility. America will profit immeasurably, economically, from a program of health and physical fitness and will derive happiness and peace of mind if disease and physical unfitness are reduced to the minimum, if not entirely eliminated. The fighting forces want only men who are "fit to fight"—young, vigorous, healthy men in the pink of condition and with a mind to fight and a "will to win." In addition, America has the dual responsibility of supplying our fighting forces on land, in the air and on and under the sea in sufficient quantity to insure victory and, at the same time, as the "arsenal of democracy," of adequately supplying all the sinews of war required by our fighting allies. Therefore the young people of today, the men and women of tomorrow, will do their patriotic duty if they prepare themselves by becoming physically fit. This book directs them how to proceed.

Medical Jurisprudence: A South African Handbook. By Dr. W. F. Rhodes, B.A., M.B., Ch.B., Senior Pathologist, Union Health Department, Cape Town, Dr. I. Gordon, M.B., Ch.B., Assistant Pathologist, Union Health Department, and Major R. Turner, B.A.M.C., M.B., Ch.B., Senior Assistant Pathologist, Union Health Department. With a foreword by The Hon. Mr. Justice H. S. van Zijl, Judge-President of the Cape Provincial Division of the Supreme Court of South Africa. Cloth. Pp. 219, with illustrations. Cape Town: Stewart Printing Co. (Pty.) Ltd., 1942.

This is a handbook dealing with problems of medical jurisprudence, or legal medicine, in relation to South African conditions. It is a practical manual rather than a comprehensive book of reference and is based on lectures given at the University of Cape Town. As pointed out in the foreword written by the Judge President of the Cape Provincial Division of the Supreme Court of South Africa, the pains the authors have taken to enumerate and stress the essentials that should be looked for by a medical practitioner when conducting a post-mortem or other important examination should greatly facilitate and add to the thoroughness of the work of district surgeons in South Africa and others entrusted with any such examination and should enable them to assist the court, if called to give evidence, with insight and assurance. In appendixes the authors have reproduced the statutory provisions which are of special importance to medical practitioners. Discussions of the duties of magistrates and district surgeons in relation to medicolegal deaths are included by the authors, and chapters deal with the various classifications of deaths of medicolegal importance, such as deaths from burns, suffocation, strangulation, drowning, poisoning and from regional injuries. A special chapter is devoted to firearm wounds and forensic ballistics. While the book was written primarily for South African consumption, it contains much that will be of interest to readers elsewhere whose intellectual curiosity has been aroused in the broad subject of legal medicine.

Emotions and Memory. By David Rapaport, Ph.D., Head of the Department of Psychology, the Menninger Clinic, Topeka, Kansas. The Menninger Clinic Monograph Series No. 2. Cloth. Price, $3. Pp. 282. Baltimore: Williams & Wilkins Company, 1942.

David Rapaport is a psychologist, not a medical man, who is closely integrated with medical procedures as the result of his connection with the Menninger group of hospitals, where he has had a chance to observe conduct disorders of varying degrees in both children and adults. He is also an expert on the so-called Rorschach technic and is well versed in the whole problem of psychology as it applies to psychopathology. The present volume is an interesting summary of the problem of emotions which has offered conceptual confusion to the psychiatrist and, even after the present book has been read, has not by any means been oversimplified. Nevertheless the book summarizes the literature extensively and the work of psychiatry and psychology on emotions. Such fields are covered as experimental psychology, psychoanalysis, hypnosis, studies of pathologic memory phenomena and direct experimental evidence such as the Rorschach test. The literature referred to in each chapter is at the end of the chapter and there is no comprehensive bibliography at the end of the book. There is an author index and a rather short subject index. The author points out some implications, some of the problems which have been set up, and the meaning of forgetting and recollection in terms of emotion. There is some discussion in the concluding chapter as to the nature of the forgetting process in terms of emotion, and there is some integrating in the various fields of psychology. There is no original experimental material, but as a source book in the field of emotion and memory, the integral relationship of which is so important to psychiatrists, it will supply a much needed source of reference.

An Introduction to Group Therapy. By S. R. Slavson, Director of Group Therapy, Jewish Board of Guardians, New York. Cloth. Price, $2. Pp. 352. New York: Commonwealth Fund; London: Oxford University Press, 1943.

The treatment of mental disorders by group means has been advanced along many lines recently. The present activity describes the efforts made at a group of schools for the purpose of character education. An excellent discussion tells how groups can be handled for therapeutic purposes, describes technic and processes such as the supervision and the meeting of those carrying out the activity. Then a number of exemplary records are presented followed by a discussion of the selection of clientele from the point of view of types of families accessible, types of children inaccessible and the natural tendencies of grouping within a large group. Such functions of leadership as acceptance of authority, the likelihood of defeat of the therapist by members of the group, authority, familiarity and humor are discussed in an interesting fashion. There is a further discussion of the therapeutic process itself and five typical cases are given. The volume ends with a discussion of the variations in group therapy and there are four appendixes, a short glossary and a fairly good index. The book is primarily of value to those who have to deal with problem children, particularly those who might be in a juvenile criminal group rather than maladjusted or childhood neuroses. The book is based on the detailed records of seven hundred and fifty children and fifty-five groups which functioned for about two years. The records include follow-up studies of adjustment for those placed in a group with arranged recreational activities. It is a useful adjunct to those who have to deal with this type of child and for the criminal psychopathologist who has a broad view toward therapy, and there should be a number of stimulating leads. It is not a book which needs to be in the general practitioner's library, however.

Behavior and Neurosis: An Experimental Psychoanalytic Approach to Psychobiologic Principles. By Jules H. Masserman, M.D., Assistant Professor of Psychiatry, University of Chicago, Chicago. Cloth. Price, $3. Pp. 269, with 7 illustrations. Chicago: University of Chicago Press, 1943.

The author of this book is a well trained psychiatrist who has had a great deal of experience not only in psychiatry but in psychoanalysis. The present volume is an attempt to give a biogenetic basis for the psychoanalytic interpretation of the neurosis. The author has checked much of his historical material on mental functions as seen in animals in such a way as to point toward his own studies. The processes are carried out with cats. The cats are frustrated in several ways through the feeding technic. There is a summary of the various behavior patterns shown by the animals, and an extensive analysis was made of the conditioned reflex concept of the motivation of behavior and the effect of frustration. A short chapter considers the evaluation of the findings in terms of psychotherapy. An extremely detailed bibliography and an excellent pair of indexes for author and for subject complete the work. The book is suggestive of further procedures and is probably as signficant a contribution to an experimental verification of psychoanalytic concepts as has thus far been produced.

Tuberculosis As It Comes and Goes. By Edward W. Hayes, B.S., M.D., F.A.C.P., Associate Professor of Tuberculosis, College of Medical Evangelists, Los Angeles. Cloth. Price, $2. Pp. 187, with illustrations. Monrovia, California: The Author, 1943.

Although written primarily for patients, this book should be read by physicians everywhere. The first chapter consists of a brief but excellent history of the development of our knowledge of tuberculosis. This is followed by several chapters dealing primarily with the tubercle bacillus. What this organism is, how it infects the body, how the body defends itself and the incidence of infection in various parts of the world are clearly presented. The classification of tuberculous lesions is discussed and illustrated by numerous drawings. Under the subject of diagnosis the author gives the tuberculin test the first place. This is followed by x-ray film inspection of the chest. This is then followed by the various steps necessary to determine whether an x-ray shadow represents tuberculosis or some other disease. Several chapters are devoted to treatment, in which the author discusses such subjects as the general care of the patients, sanatorium vs. home treatment, rest, diet, climate, chemotherapy and the various methods of collapsing the lung. Collapse therapy is illustrated by a large number of drawings. Careful consideration is given to the complications of tuberculosis, such as pulmonary hemorrhage and pregnancy. Dr. Hayes has had a large experience in dealing with all phases of tuberculosis. His work as a clinician and educator is widely known. His book should be made available to the public everywhere, as it contains a large volume of authentic and thoroughly dependable information which should be used to great advantage in the entire tuberculosis control movement not only in this country but throughout the world.

Your Arthritis: What You Can Do About It. By Alfred E. Phelps, M.D. With an introduction by R. Garfield Snyder, M.D. Cloth. Price, $2. Pp. 192, with illustrations by James MacDonald. New York: William Morrow and Company, 1943.

This small book is one of the best outlines of the subject of arthritis for the public. It was written by a doctor well qualified to present the subject. The introduction is by R. Garfield Snyder, a clinician who devotes nearly all his time and effort to the study and control of arthritis. Snyder says that in the majority of cases arthritis is curable and practically always can be brought under control. Both statements are wide open for discussion. Most clinicians wish these statements were true. The book was written with a twofold purpose: to tell the patient how to cooperate with his doctor in making life as easy and pleasant as possible while under treatment, and to help the busy doctor who has little time, especially in these days, and help the patient get the most out of life. A few of the chapters discuss the prevalence of arthritis and some of its causes, the effects of different temperaments on treatment, what makes arthritis hurt, the relation between climate and arthritis, areas of infection, when teeth should be pulled or operations performed in treatment of arthritis, when the body rebels, symptoms of the disease, gouty arthritis, the effect of faulty posture and gait, various effective methods for treatment of arthritis now in use, methods of preventing arthritis deformities and relapses, the myth of "acid system," factors necessary in planning a reducing diet, and how the patient can cooperate with his doctor to make life pleasanter for himself and to speed effective treatment.

A Manual of Pulmonary Tuberculosis and an Atlas of Thoracic Roentgenology. By David O. N. Lindberg, M.D., F.A.C.P., Director of Roentgenology, State Sanatorium, Oakdale, Iowa. Cloth. Price, $6.50. Pp. 233, with 199 illustrations. Springfield, Illinois & Baltimore: Charles C Thomas, 1943.

This book is a valuable contribution to the literature on diseases of the chest. In part I, which consists of seventy-two pages, the author has condensed all the important information that the physician needs in the diagnosis, treatment and control of tuberculosis. For many years Dr. Lindberg has devoted a large amount of time to x-ray studies of the various diseases of the chest. In fact, after studying in Brazil he introduced the 35 millimeter film in the United States. All the diagnostic, therapeutic and preventive procedures in part I are well standardized. With each of them the author has had wide experience. Part II consists of excellent reproductions of 145 roentgenograms. These have been selected with great care and represent practically all the diseases of the chest which the physician encounters in this country. In arriving at final diagnoses in each case represented, the author did not depend entirely on the roentgenograms but employed all the other procedures necessary to make accurate diagnoses. This book should be made available to all physicians. It should also find an important place in the teaching of diseases of the chest to medical students.

Malaria Quiz for Young Americans. Federal Security Agency, U. S. Public Health Service, Community Health Series No. 4. Paper. Pp. 32, with illustrations. Washington, D. C.: Supt. of Doc., Government Printing Office, 1943.

This is one of the most easily readable, wholly educational pamphlets about a single disease thus far made available. It is highly recommended to any one who wants to know about malaria.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

Rh FACTOR AND ERYTHROBLASTOSIS

To the Editor:—Recent articles on erythroblastosis fetalis fail to answer the following questions: 1. What, if any, are the chances of an Rh positive father and an Rh negative mother becoming the parents of an Rh negative infant? Have specific instances been reported? 2. What, if any, are the chances of an Rh negative mother who has previously given birth to an infant suffering from erythroblastosis bearing a normal Rh positive offspring, that is, one showing no stigmas of this disease?

M.D., Minnesota.

To the Editor:—I should like some information concerning the Rh factor, its significance, interpretation and importance in regard to obstetrics. I have a patient who gave birth to an eight month stillborn infant. Examination of both parents revealed absolutely negative findings except for the Rh factor, where one was positive and the other negative. Please explain these findings and advise whether another pregnancy should be undertaken. Is there any therapy that could be undertaken to make this pair the same?

M.D., New York.

ANSWER.—1. An Rh negative mother and an Rh positive father can have Rh negative children provided the father is heterozygous for the Rh factor. It has been demonstrated (Landsteiner, Karl, and Wiener, A. S.: Studies on an Agglutinogen [Rh] in Human Blood Reacting with Anti-Rhesus Sera and with Human Isoantibodies, *J. Exper. Med.* **74**:309 [Oct.] 1941. Wiener, A. S.: Blood Groups and Transfusion, ed. 3, Springfield, Ill., C. C Thomas, 1943) that the Rh factor is transmitted as a mendelian dominant by a pair of allelic genes, *Rh* and *rh*. Therefore Rh negative individuals are all homozygous, genotype *rhrh*, while Rh positive individuals can be either homozygous, genotype *RhRh*, or heterozygous, *Rhrh*. It is evident that if the Rh positive parent in the mating Rh positive × Rh negative is homozygous, then all the children will be Rh positive, while if the Rh positive parent is heterozygous, half of the children will be Rh positive and half will be Rh negative. Ample instances of this can be found in the references cited.

2. If an Rh negative mother has previously had a child with erythroblastosis, the chances are that every future Rh positive child will also have the disease; in fact, usually in progressively severer form. There is, however, always the remote possibility that the mother may suddenly become spontaneously desensitized, just as hay fever sufferers occasionally recover from their disease without treatment.

3. In the case cited in the second letter, it is important to know which of the two parents was Rh negative and which was Rh positive. If it was the mother who was Rh negative and the father Rh positive, the chances are that the eight months stillborn child had erythroblastosis, provided other causes of death, such as syphilis, torsion of the umbilical cord and asphyxia, are excluded. Once an Rh negative mother has had an erythroblastotic baby, all future Rh positive children are almost certain to have the disease whereas Rh negative babies will be spared (Levine, Philip; Burnham, Lyman; Katzin, E. M., and Vogel, Peter: The Role of Iso-Immunization in the Pathogenesis of Erythroblastosis Fetalis, *Am. J. Obst. & Gynec.* **42**:925 [Dec.] 1941). As pointed out, the chance that future children will be Rh positive is either 50 or 100 per cent, depending on whether the Rh positive parent is heterozygous or homozygous.

Before offering any opinion concerning the outlook of future pregnancies, it would first be necessary to repeat the Rh tests in order to exclude the possibility of error in technic. Such errors are not uncommon on account of the delicacy of the tests. If the retests show that the mother is Rh negative and the father Rh positive, the prognosis should be guarded, while if the mother proves to be Rh positive the chance for a normal baby in future pregnancies is usually good. If the mother decides that, despite the fact that she is Rh negative she wants to undertake another pregnancy, she must be made to realize that she does so at the risk of having another stillbirth or infant with erythroblastosis fetalis. If the baby is born alive there is a good chance of saving it by judicious transfusions of group O Rh negative blood. There is no therapy which can change the Rh type of any individual, since the type is constitutional and remains constant throughout life.

USE OF TERMS GRAVIDA AND PARA

To the Editor:—Recently at our hospital we have had several "heated" discussions among the interns and obstetric staff as to the definition and practical usage of certain obstetric terms. The main substance of the argument was in the proper usage of Para I, Para II, Para III, and so on, with its relationship to primipara, multipara, primigravida, multigravida and other similar terms. It has been the practice on our obstetric sheets to list at the top of the history sheet of a woman who is coming into the hospital to have her first child, this being her first pregnancy, Gravida I, Para 0. Therefore, on her next admission, being admitted in labor, about to have her second child, her admission record would read Gravida II, Para I. There has been no misunderstanding of the term gravida, but several of the men feel that the classification as noted, even though carried out of several surrounding institutions, is wrong, and that, since this woman coming in is known universally as a primipara, her chart should read Gravida I, Para I even before the birth of her child. When I was an intern we argued about the same definitions and usage of the terms, and it seems that with the various definitions given in the dictionary it is an endless argument, the dictionary agreeing with both points of view. We should appreciate it greatly if you would help us clarify this subject by advising us of the accepted definitions and the practice and procedure that are carried out in various institutions throughout the country relative to this subject.

M.D., Pennsylvania.

ANSWER.—The terms gravida and para have been subjected to various interpretations. The following definitions have found wide acceptance:

Gravida refers to a pregnancy, regardless of its duration. Parity refers to pregnancies that have continued to the period of viability. A patient is Gravida I during her first pregnancy. She becomes Para I when she delivers a fetus which has been viable whether or not the child is actually dead or alive at birth. During the second pregnancy she is listed as Gravida II, Para I. If she had two abortions and then becomes pregnant, she would be Gravida III, Para 0. The period of viability is reached at the end of twenty-eight weeks' gestation.

To be consistent, a patient during her first pregnancy is a primigravida and during her second and subsequent gestations a multigravida. She is not a multipara unless she has had at least two pregnancies that reached the period of viability. The terms concern themselves with the pregnancy and not with the fetus, for a woman who has delivered twins at the end of her first pregnancy is still Gravida I, Para I.

DERMATITIS AMONG CANNERS

To the Editor:—We have a corn canning company in our village, and the manager has approached me for a solution to one of his problems. In the past most of the workers there have worn rubber gloves as a protection from a contact dermatitis which they refer to as "corn itch." I understand that this has been common wherever corn is canned, so I imagine that it has received attention in the literature. Is there any other practicable method known than wearing rubber gloves which will afford suitable protection for the workers? If not, do you know if priorities for the purchase of rubber gloves are obtainable for such industries?

C. T. Burgan, M.D., Brierley, Minn.

ANSWER.—Dermatitis among fruit and vegetable canners is quite common. The types of dermatitis in the canning industry are much alike regardless of the material that is being canned.

The best protection against dermatitis in the canning industry is the wearing of rubber gloves, impervious sleeves and impervious aprons. Since the canning of fruit and vegetables is an industry essential to the war effort, priorities for the purchase of rubber gloves to protect workers can be obtained.

The impervious sleeves and aprons are not on priorities. They can be purchased from the West Disinfecting Company, Long Island City, N. Y., the Milburn Company, Detroit, and Don-Ed Fabrics, Inc., New York.

PHYSICAL EFFICIENCY AND TOBACCO SMOKING

To the Editor:—In The Journal, July 17, 1943, page 839, the question is asked "Is there any scientific basis for the popular belief that smoking causes shortwindedness?" I have never been in agreement with the statement that the shortness of breath appears to be due to the effect of nicotine on the heart and circulation, nor am I in agreement that the pain on exertion in heavy smokers is due to the coronary contraction resulting from the action of nicotine. It is my personal belief, formed after many years of study of so-called tobacco shortwindedness, that it is due to the habit of "breathing shallow" during extended periods of smoking. That is, the smoker spends a good deal of his time in smoking and therefore gets into the habit of breathing shallow with a narrow respiratory excursion. When the time comes for a wider respiratory excursion because of increased oxygen requirements, the embarrassment is due to calling into play additional lung and muscle tissue that has not previously been functioning. If the smoker who experiences shortwindedness will practice deep breathing when he is not smoking, he will not have shortwindedness. This to me is a clear indication that shortwindedness is not due to nicotine per se but is due to habitual shallow breathing.

C. P. Segard, M.D., Leonia, N. J.